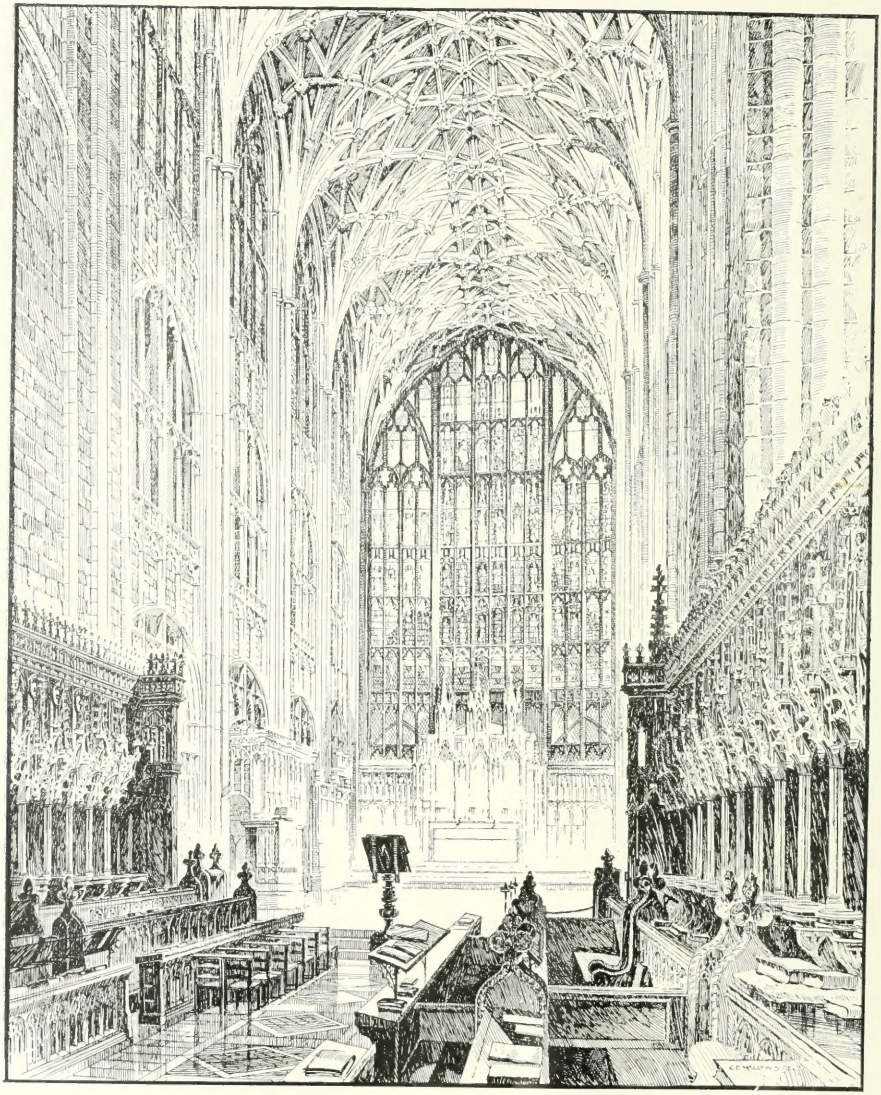

C. E. M.

Gloucester Cathedral Choir

An Introduction to English Church Architecture

From the Eleventh to the Sixteenth Century

by

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"Stalls and Tabernacle Work," "Misericords," "Westminster Abbey"

With 1,400 Illustrations

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PREFACE

A FEW words are necessary as to the intent and scope of this book. As the title indicates, it is an introduction to the study of English church architecture, excluding work done before the Norman Conquest and after the Reformation. It may be thought that a book in two quarto volumes is somewhat voluminous for an "Introduction." The answer is that a general treatment, especially if aided, as in these volumes, with all manner of plans, drawings, sections, and diagrams, as well as photographs, will be found at once easier to follow and more enjoyable than the unpalatable pemmican of a condensed text-book. It may be added that though the book contains over 1,000 pages, yet if the glossaries and indexes and the numerous excursuses in small type be omitted, the text proper does not amount to more than 400 pages, fully half of the book being occupied with illustrations. The book is intended not so much for the professional student as for the great body of readers who nowadays are interested in mediæval architecture and wish to obtain some general knowledge of it. For them it seemed desirable to attempt an account which, without ceasing to be thorough and detailed, should be elementary in character. With that intent, technical terms have been eliminated where possible, and where the use of them was unavoidable, the meaning of each has been defined in the text, and again in an alphabetical glossary prefixed to the first volume. Archæological history also has been as far as possible eschewed; what has been attempted is to give a plain, straightforward account of mediæval building construction as controlled by mediæval ritual.

Being intended chiefly for those with little or no previous knowledge of the subject, the book demanded exceptional copiousness of illustration. Fortunately, the last decade has been marked by a large advance in the practice of architectural photography. There are more architectural photographers than ever before, and their work is marked by greater technical excellence. Formerly general views of exteriors and interiors could be had in abundance, but very little architectural detail; it is now easy to obtain photographs of vaults and roofs, in plan as well as in perspective, window tracery, foliated and molded capitals, bases, ground-courses, and the like. Much good work has been done

by the Architectural Details Postal Club, and a large amount of illustrative material has been put at the disposal of the writer by Mr Crossley and Dr Buckley and other members of this club, as well as by Mr J. F. Hamilton, Rev. F. Sumner, Mr R. P. S. Sumner, Mr S. Smith, Mr C. F. Nunneley, Dr F. A. Allen, and many others; it is well within the mark to say that several thousand photographs of English mediæval architecture have been sent to the writer in recent years for inspection and selection. It seemed eminently desirable that this valuable work should not remain unrecognised and unknown, but that at any rate the best of it should be put on permanent record. Nor could it be said that in his previous volumes, liberally illustrated as they are, the writer had exhausted the treasures of our mediæval architecture: they are indeed inexhaustible. It has been found possible to insert in the text no less than 1,400 illustrations. Again, the book being intended largely for beginners, it was desirable that the illustrations should be on a large scale, so that detail might be readily seen and examined: as examples may be noted the plans on p. 119, the foliated capitals on p. 534, the roofs on p. 833. The subjects selected are, in the vast majority of cases, such as had not been illustrated by the writer before; but where they had appeared previously, the illustrations are as a rule taken from a different point of view, or are on a larger scale, or are reproduced by a different process.

The text is subsidiary to the illustrations, and has been worked out in the form best suited to those who are taking up the study for the first time. The whole subject has been surveyed afresh, and as was only natural, new facts have to find place, and sometimes former conclusions have had to be modified or withdrawn. Much water has flowed under London Bridge since the author began to write on mediæval architecture; the world has not stood still all those years. All the time information has been accumulating; he has visited hundreds of additional churches in England, France, Italy, Spain, and Belgium; of the greater churches of England, cathedral, monastic, and collegiate, there are few that have not been revisited, most of them again and again. The result will be apparent in the amount of new information to be found on nearly every page of the present volumes. In these years the writer has learnt much; he is not ashamed to admit that he has had also to unlearn much; no honest student can continue to work at his subject year after year without having his good opinion of his previous work considerably lowered; so much there is that ought to have been said but was omitted, so much that ought to have been said otherwise, so much, alas! that ought not to have been said at all. Not only that, but even where the information was fairly accurate and adequate, it not infrequently admitted of a better mode of presentation. A considerable improvement in clearness of arrangement and lucidity of expression was desiderated, and it is hoped has in some measure been attained;

in some chapters in particular, *e.g.*, on planning, the base and plinth, bay design, the vault and the roof, a much more lucid and consecutive treatment was obtainable.

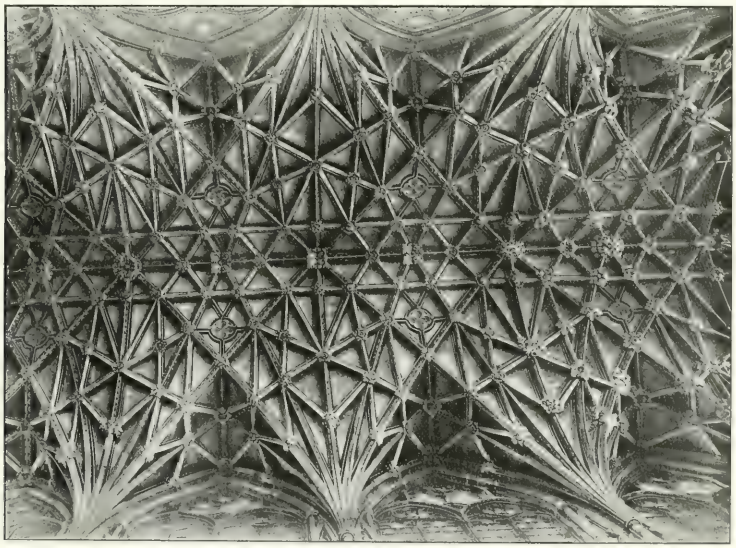
One specially novel feature should be mentioned. The treatment of the main constructional subjects is throughout analytical. But even if this treatment is fairly adequate, no student can arrive at the end of such chapters as those on vaulting, abutments, window tracery, roofs, etc., without considerable mental strain. If he has read faithfully, and looked up his cross-references as he should have done, there may remain with him a bird's-eye view of the whole subject; but he is very far from grasp or mastery. What he ought to do is to read the chapter straightway a second and even a third time. This, however, cannot be expected of a jaded reader; he wants a change, not a second helping of fish, but an omelette or an entrée. Such a change is now provided. The more important subjects, after being treated analytically, are then discussed over again, but in the concrete, *e.g.*, after 106 pages setting forth the science and art of vault construction, fifty-seven individual vaults are selected for study, and are dissected separately. If the reader will turn to these, he will find all the principles of construction which he has read about in the text set forth over again, but in such different fashion that he will hardly notice that the new dish is after all but a réchauffé. This application of the concrete method of study, aided by a copious apparatus of diagrams, has not been attempted before, and, it is believed, will be found really helpful.

Nor will the readers for whom this book has been prepared be likely to complain that here and there it is a good deal more than a treatise on building construction. It is good for those who are to be introduced to mediæval church architecture to know not only how a church was built, but why it was built, who built it, who served in it, who worshipped in it, and what manner of worship was theirs—Ancient or Modern. Accordingly, much space has been devoted in the introductory chapters to matters of human interest, before plunging into stones and mortar.

The amount of new matter in these volumes is very considerable. An analysis of its fourteen chapters will shew that this is so. The first chapter commences with a differentiation of the parish church from cathedrals, churches of monks and canons and collegiate churches; the characteristics of the Monastic Orders, the Canons Regular and Canons Secular, the Friars and the Military Orders are set forth, and special attention is given to the constitution of collegiate churches, a subject on which much misapprehension has prevailed. Lists also of the larger churches of the above are given, both those which are still in use, wholly or in part, and the more important ruins. All this is entirely new. The second chapter deals with a subject with which few of those who visit or worship in the great churches of monks or canons are, as a rule, acquainted, viz.,

the purposes which the various portions of the greater churches were intended to subserve. It is a subject of great importance, however, and some knowledge of it is indispensable if the meaning of cathedral, abbey, or collegiate church is to be apprehended. Sections, therefore, are given on the presbytery, the choir, the lay use of the nave, the number and sites of altars, the uses of transepts, the requirement of chapels, the development of the chapels of Our Lady and the local saint, relics, shrines and pilgrims, the crypt and the bonehouse, processional ritual, intramural burial and obits, chantries and chantry chapels. All this is of much interest as well as of importance, and is now for the first time set forth at length. The third chapter deals with the planning of the cathedral, monastic and collegiate churches. This subject had been discussed by the writer more than once before. Now, however, the whole subject of planning has been treated, not as before by reference to selected plans, but to every existing plan of which information could be obtained. As will be seen from the references on pp. 170-172, the labour involved was very considerable. It will be found more easy to follow the intricacies of church planning owing to the large number of plans, thirty-eight in all, which have been inserted. They are not only numerous but on a large scale, and on them are clearly marked the ritual divisions of each church. The fourth chapter is devoted to the strange history of the growth of the English parish church, of which a consecutive account appears for the first time; it occupies no less than 101 pages. This chapter embodies the results of numerous visits to village and town churches, certainly not less than two thousand. The parish church has never received its due; any number of monographs have been written on cathedral and monastic churches; but the vast majority of our twenty thousand parish churches have remained unsung. Yet the parish church is more important to most of us than the cathedral or monastic church; one or two examples of the latter we may have within a reasonable distance, but parish churches are all round us, and call for study. The difficulties they present to study, however, are very considerable; and a great deal of trouble has been taken to set forth the inductive, scientific method of research which alone may be safely employed in parish church research. Here again the chapter concludes with a number of churches, parochial and other, studied in the concrete. Those who will take the trouble to work through the history of St. Michael's church, St. Albans; St. Nicholas, Leicester; Shere church, Surrey; Westhall church, Suffolk; Dorchester abbey church, Oxon.; Leominster church, Herefordshire; and Wakefield cathedral, pp. 240-275, will find a powerful implement of research with which to explore the mine of unworked interest in the English parish church. In the fifth chapter we turn to building construction; this particular chapter deals with vaulting. A considerable amount of space has been given to the subject of lierne vaulting, which has hitherto received too little attention. Special attention may be drawn to the illustrations of lierne vaults; they are on a large scale, and on a high artistic level, as may be

seen on reference to the illustration of the vault of the choir of Gloucester cathedral. The English vaults are at once the most scientific and the most artistic in the world, and they now obtain something like adequate presentation. The text is followed by dissection of fifty-seven individual vaults. As a whole, the chapter may claim to be the fullest and most comprehensive account of English vaulting that has yet appeared. The sixth chapter deals with the various systems of abutment by which the vaults are kept from thrusting out the walls. The methods of abutment employed are shewn in a complete set of large-scale diagrams. And



L. S. Gloucester Choir (1337-1350).

to drive the conclusions home, they are given twice over. In the seventh chapter an account has been added of the flint workwhich was in such large use in East Anglia, and drawings are given of characteristic flush tracery and panel work in flint. Illustrations are also inserted of timber-built churches. Decorative arcading is one of the most characteristic features of Norman and Gothic architecture, and numerous large-scale illustrations are devoted to it on pp. 440-459. In the eighth chapter there is a detailed account of a curiously local set of capitals in the Early Gothic of the West of England. As they seem hitherto to have escaped notice, they are fully illustrated; see pp. 502-504.

The chapter on capitals has been supplied with a host of illustrations on a large scale; many pages contain not more than three or four illustrations; it is only when they are on a large scale, *e.g.*, pp. 516, 518, 524, that the consummate artistic gifts of our mediæval carvers can be fully apprehended and realised. In this connection special attention has been given to the subject of the carving of naturalistic foliage; on this Sir Daniel Morris, K.C.M.G., has kindly contributed a section. The account of the base is to a large extent new; it has not been recognised before how important it is to consider it in connection with the plinth. The ninth chapter deals with the window. This is not treated as an independent member of the building, but is discussed in reference to the general subject of the lighting problem in mediæval churches, as regards the end walls, the triforium chamber, and the walls of aisles and clerestory. Considerable space is given to the influence of stained glass on mediæval design. Room is found also for discussion of the interesting subject of the English origin of French Flamboyant, as to which there has been of late much dispute in France. Another subject which has excited controversy for more than half a century is that of the use of the so-called Low Side Window, which is discussed and illustrated at considerable length; and with the new information, documentary and other, now adduced, the problem has been brought, it is hoped, considerably nearer solution. Probably, however, the chief value of this chapter lies in the illustrations, which are very numerous and on a large scale, and are spread over 137 pages. Never before has there been so comprehensive an exposition of the wealth and diversity of English window tracery; even to those who have considerable knowledge of English Gothic it will come as a surprise and revelation. Finally, the whole text of the chapter is reinforced by individual study of concrete examples. In the short chapter on doorways and porches a number of large-scale illustrations of the two-storied porches of East Anglia are added, together with an account of the curious uses, half secular, half ecclesiastical, to which the parochial porch was put. The following chapter deals with the difficult subject of English bay design in the English churches as conditioned by the treatment of the triforium. This has been written and rewritten by the author again and again; it is to be hoped that it has now assumed a form somewhat approaching to finality. The small number of pages devoted to this subject gives no indication of the amount of labour that has been spent on it. The chapter on roofs is based on the excellent book on the subject by Messrs Brandon. But their work had practically omitted altogether the consideration of a most important set of roofs, the cradle roofs of Devon and Cornwall; this defect has been remedied. The problem of roof construction has been simplified and rendered attractive by many fine illustrations of hammer-beam, tie-beam, and cradle roofs, which will be found on pp. 793-846; it is enough to make every carpenter in the kingdom throw up his cap in the air at the thought that he practises an

art which has achieved such triumphs. Of towers a large number of large-scale illustrations have been given, and an excursus has been added on the most important tower-group in England, that of Somerset. In the chapter on spires also there are many illustrations on a large scale, and a new and more adequate classification of timber spires has been given. An appendix has been added on the origin of the basilican plan of the Early Christian church; and the opportunity is taken to discuss the subject of the orientation of churches and the symbolical deviation of the axis of the mediæval chancel.

Two glossaries have been prefixed to the text. In the first, French equivalents have been inserted for the use of French readers. The second is intended for English readers who wish to study the results obtained by French archæologists in the study of mediæval architecture. Both these glossaries are new, and it is hoped will be found of real service.

Such, then, is the general character of the present work. It contains a very considerable amount of new matter. Even when it deals with facts common to all treatises on mediæval architecture, there has been no copying or abridging; each subject has been passed through the writer's mind anew; by this alone freshness and originality and independence of treatment were to be obtained. That the subject has been made easier of comprehension may fairly be expected from the amount of time and labour expended on it; one can hardly turn over a subject in one's mind again and again in the course of a decade without clarifying one's mental view and increasing one's power of exposition.

But just as those who have studied the writer's previous works may find it desirable to obtain also these supplementary volumes, so it will be necessary for those who purchase the new work, if they desire a more comprehensive, detailed, and advanced treatment of the subject, to go on to the writer's earlier books, especially that on *Gothic Architecture in England*.[1] It is to be borne in mind that in the present volumes there is not a word said of the historical account of church architecture, which in that book occupies the first 142 pages. In the older book, moreover, there is a chronological list of the chief English churches arranged alphabetically, which adds greatly to the value of the volume. Again, it contains a copious bibliography, which the new book does not. It also goes largely into the important subject of moldings, to which twenty-seven plates are devoted. The two books indeed are mutually complementary; it is not intended that either shall be employed as a substitute for the other.

[1] *Gothic Architecture in England*: An Analysis of the Origin and Development of English Church Architecture from the Norman Conquest to the Dissolution of the Monasteries. With 1,254 illustrations, comprising 785 photographs, sketches, and measured drawings, and 469 plans, sections, diagrams, and moldings. Imperial 8vo, 800 pp., handsomely bound in art canvas, gilt. Price 31s. 6d. net. Published in 1905; reprinted 1906, 1912 (Batsford).

As regards the illustrations of the book the author is deeply indebted to the kindness and assistance of very many friends and colleagues, without the assurance of whose generous co-operation the work could not have been undertaken. For the use of photographs he is indebted to Messrs Alinari, Florence; Mr F. J. Allen, Mr D. Anderson, Rev. W. T. Alston, Mr Harold Baker, Mr H. C. Beckett, Mr W. G. Bannister, Mr W. H. Barrell, Rev. T. N. Baxter, Mr R. P. Brereton, Mrs Holloway Calthrop, Mr Max Clarke, F.R.I.B.A., Mr J. S. Collings, Mr F. H. Crossley, Mr W. Davidson, Owen Jones student, 1903, Messrs Dawkes & Partridge, Rev. F. B. Dickinson, Mr W. Marriott Dodson, Mr R. W. Dugdale, Mr J. F. East, Mr J. R. Edis, Mr Elsden, Rev. G. Hawkes Field, Rev. J. T. Fowler, D.C.L., Mr W. Francis, Mr C. H. Freeman, Mr J. Freeman, Miss Gertrude Fryer, Mr Cecil Gethen, Hereford, Rev. T. Gough, Mr Charles Goulding, Beverley, Mr R. T. Green, Mr E. L. Guildford, Mr J. F. Hamilton, Mr George Hepworth, Monsieur Henri Heuzé, Mr Hal Hitchcock, Mr F. T. S. Houghton, Mr H. E. Illingworth, A.R.I.B.A., Mr F. Jenkins, Rev. R. L. Jones, Mr P. M. Johnston, F.S.A., Rev. F. R. Lawson, Mrs E. M. Leather, Mrs Jessie Lloyd, Mr G. H. Lovegrove, Mr W. Maitland, Mr W. H. Marsh, Rev. Walter Marshall, Mr H. E. Miller, Mr C. F. Nunneley, Mr M. E. Page, Rev. H. B. Pim, Mr H. Plowman, Mr Alan Potter, Miss E. K. Prideaux, Rev. T. Romans, Rev. G. W. Saunders, Mr E. W. Smith, Mr S. Smith, Rev. F. Sumner, Mr F. R. P. Sumner, Mr F. R. Taylor, Mr G. H. Tyndall, Mr J. E. Underwood, Mr H. White, Mr Alfred Watkins, Mr D. Weller, Mr G. H. Widdows, A.R.I.B.A., Mr E. W. M. Wonnacott, F.S.I., Mr T. Wright, Mr E. Yates.[1]

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[1] Photographs of Durham cathedral, Lincoln minster, and Wells cathedral may be had from Mr J. R. Edis, 52 Sadler Street, Durham; Mr S. Smith, 36 Steep Hill, Lincoln; and Messrs Dawkes & Partridge, Wells, Somerset, respectively. For photographs of architectural detail in general, especially of woodwork, application may be made to Mr F. H. Crossley, Bradshaw House, Allostock, Knutsford, and Mr W. Marriott Dodson, Bettws-y-Coed, N. Wales.

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[1] Reproductions of the above are distinguished by the initials of the owner of the photograph; those by the writer are marked F. B.

Serjeantson, M.A.; *Die Kirchliche Baukunst des Abendlandes*, by Dehio and von Bezold; *Reason in Architecture*, by Sir T. G. Jackson, R.A.; *St. Paul's Cathedral, London*, by William Longman (drawings by E. B. Ferrey), by permission of Messrs Longman; *Concise Glossary of English Architecture* and *Gothic Moldings*, by permission of Mr James Parker; *Gothic Architecture*, by Thomas Rickman; *L'architecture normande*, by Ruprich-Robert; *Decorated Windows*, *Lincoln Excursion*, *New Shoreham Church*, and *Seven Periods of English Architecture*, by Edmund Sharpe; *Architecture for General Readers*, by Mr H. Heathcote Statham, F.R.I.B.A.; *Architectural History of Ely Cathedral*, by the Rev. D. J. Stewart; *Lehrbuch der Gotischen Konstructionen*, by G. Ungewitter (by permission of Messrs Tauchnitz); *Church Bells of England*, by Mr H. B. Walters, M.A.; *Church Bells of Devon*, by the Rev. H. T. Ellacombe; *Spires and Towers of England*, by Charles Wickes; *Lincoln Minster*, by Charles Wild; *Canterbury Cathedral*, *Chichester Cathedral*, and *The Construction of Vaults in the Middle Ages*, by Professor Robert Willis; *Manual of Gothic Moldings*, by F. A. Paley.

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TABLE OF CONTENTS

VOLUME I

PREFACE - v

GLOSSARIES xix

CHAPTER I.—CHURCHES OF MONKS AND CANONS

Benedictines - 7
Cluniacs 9
Cistercians - 9
Carthusians - 12
Austin Canons 12
Premonstratensian Canons 14
Gilbertine Canons - 14
Dominican Friars 15
Franciscan Friars 15
Austin Friars 15
Knights Templars 15
Knights Hospitallers 15
Secular Canons 16
Collegiate Churches 20

CHAPTER II.—REQUIREMENTS OF THE GREATER MEDIÆVAL CHURCHES

Presbytery 29
Choir 32
Lay Use of the Nave 38
Number and Position of Altars 48
Central Transept - 58
Western Transept 62
Eastern Transept 66
Chapels - 70
Lady Chapel - 72
Relics, Shrines, and Pilgrims 72
Crypt and Charnel House - 84
Saint's Chapel or Feretory - 88
Processional Ritual - 93
Intramural Burial and Obits - 102
Chantries and Chantry Chapels 104

CHAPTER III.—PLANNING OF CHURCHES OF MONKS AND CANONS

Churches with Apsidal Chevets - 113
Churches with Rectangular Chevets - 138
Cistercian Planning 158
Planning of Churches of Regular Canons - 164
Carthusian Planning - 165
Planning of Friars' Churches - 167
Planning of Templars and Hospitallers 169
Illustrations of Planning - 172

CHAPTER IV.—PLANNING AND GROWTH OF THE PARISH CHURCH

	PAGE		PAGE
Planning of the English Parish Church	177	Chapels	216
Growth of the English Parish Church	194	Priests' Rooms	218
Baptistery	208	Anchorites and Anchorages	220
Parochial Transepts	210	Central Towers	229
Chancels	211	How to Study the Parish Church	234
Sacristies	215	Analysis of the Growth of Churches	237

CHAPTER V.—VAULTING

Groined Vaults	286	Lierne Vaults	330
Cross-ribbed Vaults	295	Fan Vaults	340
Vaults with Ridge Ribs and Tiercerons	327	Analysis of Vault Construction	357

CHAPTER VI.—THE ABUTMENT SYSTEM

Buttresses	385	Opposing Thrusts	408
Pinnacles	394	Typical Abutment Systems	410
Flying Buttresses	397		

CHAPTER VII.—WALLS AND ARCHES

Walls	416	Timber Churches	427
Foundations	420	Arches	430
Flintwork	422	Arcading	455

CHAPTER VIII.—THE PIER AND ITS MEMBERS—PART I.

Columns: Cylindrical and Octagonal Piers	462	Romanesque Compound Piers	466
		Gothic Piers	474

CHAPTER VIII.—THE PIER AND ITS MEMBERS—Parts II. and III.

	PAGE		PAGE
The Capital	487	Gothic Capitals	509
Romanesque Capitals	487	Capitals with Conventional Foliage	509
Corinthianesque Capitals	487	Crocket Capitals	509
Cubical or Cushion Capitals	494	Capitals with Leaf Scrolls	517
Scalloped Capitals	494	Capitals, etc., with Naturalistic Foliage	522
Coniferous Capitals	499	Capitals with Undulatory Foliage	530
Capitals with Incurved Cones	499	The Abacus	540
Capitals with Interlacings	500	Molded Capitals	543
Capitals with Figure Sculpture	501	The Base and Plinth	549
Capitals with Naturalistic Foliage	506		

CHAPTER IX.—ON THE LIGHTING OF THE MEDIÆVAL CHURCHES

Lancet Windows	560	Flowing Tracery	611
Grouped Lancets	561	Origin of French Flamboyant Tracery	616
Fenestration of Façades	562	Analysis of Windows with Flowing Tracery	628
Aisle and Clerestory Windows	566	Rectilinear Tracery and Stained Glass	641
Indirect Lighting through Triforium Chamber	567	Analysis of Windows with Rectilinear Tracery	659
Origin of Traceried Windows	572	Circular Windows	668
Plate Tracery	579	Triangular Windows	669
Geometrical Tracery	581	Sound Holes	671
Window Construction	585	Jesse Windows	671
Analysis of Windows with Geometrical Tracery	593	Low Side Windows	673

CHAPTER X.—DOORWAYS AND PORCHES

Doorways	697	Analysis of Doorways	714
Norman and Gothic Carved Ornament	709	Porches	718

CHAPTER XI.—THE TRIFORIUM AND BAY DESIGN

Open Blindstories	745	Triforium, disappearance of	769
Walled Blindstories	758		

CHAPTER XII.—THE CLERESTORY 777

CHAPTER XIII.—PROTECTION FROM RAIN

Section I.—Roofs

Rafter Roofs 789
Double Truss Roofs 795
Tie-Beam Roofs 796
Arch-Braced Roofs 815
Wagon Ceilings 822
Hammer-beam Roofs 826
Miscellaneous Roofs 839

Section II.—Drainage of Roofs

Dripping Eaves, Corbel Table, Cornice 847
Gutter, Gargoyles 849
Parapets, Battlements 851

Section III.—Protection of Walls

Dripstones, Stops, Corbels 858
String-courses 863
Ground-courses 867

CHAPTER XIV.—TOWERS AND SPIRES

Section I.—Towers

Towers of Churches of Monks and Canons 873
Towers of Parish Churches 878
Illustrations of Towers 891
Dovecots in Churches 918

Section II.—Spires

Timber Spires 922
Stone Spires 926

APPENDIX

The Early Christian Basilica, its Origin 956
Orientation of Churches 959
Deviation of Axis of Chancel 960

INDEX LOCORUM 961

INDEX RERUM 981

GLOSSARY

I.—ENGLISH

Numerals in clarendon type refer to illustrations

A

ABACUS (*tailloir*).—The flat slab on the top of a capital, 540.

ABUTMENT (*culée*).—Masonry added to a wall or pier to stop the lateral thrusts of arches, vaults, or roofs, or to strengthen a weak wall, 385.

ACUTE OR LANCET ARCH (*lancette*), 432.

AISLE (*bas côté, collateral*).

ALTAR TOMB.—A high tomb with a flat slab on the top: frequently placed on the north side of the chancel for use as an Easter sepulchre: a better term for it is *Table tomb*, **55**.

AMBULATORY (*déambulatoire* or *carolle*).—The procession aisle round a chancel; or more specifically, the eastern part of the above; *i.e.*, that portion which runs north and south at the back of the High altar, 100, 114.

ANNULETS (*bagues*).—Bands of stone or metal in which were fitted sections of detached shafts, 476, **481**.

ANTHEMION. See *Palmette*.

APSE (*abside*).—The semicircular or polygonal east end (*chevet*) of a presbytery, or an aisle, or a transeptal chapel, 113.

ARCADE.—An arcade is a row of arches carrying a wall; if merely decorative, it is to be styled ARCADING, 455.

ARCADING (*arcature*).

ARCHITECTURE (*l'art de bâtir*).—The art of building.

ARCHITRAVE.—The lowest member of a Classic entablature.

ARCHIVOLT.—The under-surface of an arch; in mediæval architecture more properly termed *soffit* or *intrados*.

ARCUATED CONSTRUCTION.—A method of construction in which openings, *e.g.*, windows, doorways, pier-arcades, are spanned by arches, and not by lintels, 430.

ARRIS (*arête*).—A sharp edge produced by the meeting of two surfaces; *e.g.*, two sides of a spire, 953, or two cells of a vault, 286; in the latter it is preferable to term it a *groin*.

ASHLAR (*pierre de taille*).—Hewn or squared stone, as opposed to *rubble* or *rag*.

ATRIUM.—The open court in the centre of a Roman house, or in front of a church, 93, 958.

ATTACHED OR ENGAGED SHAFT (*colonne engagée*).—One which is not *detached*, but is bonded into the core of the masonry behind, 464.

ATTIC BASE, 549.

AXIAL, or longitudinal ridge rib, 327.

B

BALLFLOWER.—A globular flower with three incurved petals; most common *temp.* Edward II., **721**.

BALUSTER.—In Anglo-Saxon work a shaft turned in the lathe; *e.g.*, in the triforium of St. Albans, **756**.

BARREL VAULT (*voûte à berceau*).—A vault produced by the intersection of two half-barrel vaults; it differs from a *tunnel* vault in that it is somewhat domical, and consequently has not level ridges, 282 *note*, 292 *note*.

BARROW HOLE.—An aperture left open when a wall is building, for the introduction of materials, and when the building is completed, for the withdrawal of scaffolding, when it is blocked up, *e.g.*, Offord and Dorchester.

BAR TRACERY.—Window tracery composed of bars of stone, and not scooped out of flat slabs, 579.

BASE.—The member immediately below a column, shaft, or pier; usually it rests on a *plinth*, 549.

BASILICA.—An Early Christian church with aisled nave, colonnades, clerestory, and apsidal chancel, 464, 957.

BATTER.—Walls built with a sloping face, *e.g.*, the Thames Embankment, are said to batter, and the slope is termed the batter.

BATTLEMENT (*crenelage à merlons ajourés*).—A parapet consisting of *merlons* and *embrasures*, 857.

BAY (*baie*).—A compartment of a building; it may be bounded by two pillars, two buttresses, two windows, two principal rafters of the roof, or two transverse arches of the vault.

BEAD.—A diminutive roll or torus, 485.

BEAKHEAD.—A Norman ornament, **720**.

BELL (*corbeille*).—The lower portion of a molded capital; it is of the shape of an inverted bell, 544.

BELL-COTE.—A small turret or gable for holding bells, **683**.

BENCH TABLE.—A stone seat along a wall or round a pier.

BILLET.—A Norman ornament, **719**.

BIPARTITE.—A church consisting of only two parts, nave and chancel; *e.g.*, Farley, **234**, and Barfreston, **179**.

BLINDSTORY.—A triforium chamber which has no windows at the back, 741.

BOND (*taire corps avec*).—The overlapping of stones or bricks in a wall. If at any point they do not overlap, there is a *straight joint*; *e.g.*, Farley, **234**. The shafts of a pier, etc., and the springers of an arch or vault are said to be bonded when they are not built clear of the masonry behind, but are built with and into it.

BOSS (*clef de voûte*).—An enlarged keystone at the intersection of ribs of a vault or roof; if much elongated, it is termed a *pendant*, 304.

BOWTELL (*boudin*).—A circular roll or torus.

BRACES (*jambe de force*).—Inclined or curved timbers in a roof inserted to support or strengthen other timbers, 801, 810.

BRACKET is a double ogee molding.

BREAKING JOINT.—When no joints or few joints of the courses of wall or arch coincide with those of the course above and the course below, they are said to break joint.

BROACH.—Is an inclined mass of masonry built into the oblique sides of the bottom of a spire and covering a squinch, **929**.

BROACH SPIRE is one which has *broaches* at its base, 929.

BUILDER'S DOORWAY.—See *Barrow hole*.

BUTTRESS (*contrefort*).—A projecting mass of masonry added to a wall to stop the thrusts of an arch, vault, or roof, or to strengthen it where weakened by windows, 385.

C

CAMBER.—To saw or bend a tie-beam so that it is higher in the centre than at the ends, 798.

CAMPANILE (*clocher*).—A bell tower.

CAPITAL (*chapiteau*).—The member at the top of a column, or shaft, or pilaster, or pier, below the abacus, where the abacus is present, 487.

CARNARVON ARCH.—This is really not an arch at all, but a shouldered lintel, or a lintel supported at the ends by corbels, 437.

CASEMENT.—A broad, shallow, concave hollow common round late Gothic windows and doorways, between clustered columns of piers, etc., *e.g.*, Nantwich, **656**.

CATACOMB.—Underground galleries like those of a coal mine.

CATHEDRAL.—A church containing the throne of a bishop.

CELERY STALK CAPITAL.—A foliated capital the stalks of whose foliage are broad at their base, 494, 509.

CELL OF A VAULT.—Any one of the compartments of a vault.

CENTRE, OR CENTERING (*cintre*).—The temporary structure of wood on which arches and vaults are constructed, **293.5, 6, 7**.

CHAMFER (*chanfrein, biseau*).—An edge of wood or stone sliced off in a sloping direction is said to be chamfered, 444, 451.

CHAMFER CUSPS, 587.

CHANCEL.—The choir and presbytery of any church, whether parochial, monastic, or collegiate, 36.

CHANTRY. — An ecclesiastical foundation by which money or goods are bequeathed for the *singing* of obits, 104.

CHANTRY CHAPEL.—A chapel in which obits, *i.e.*, masses for the dead, provided by a chantry endowment, are to be sung.

CHAPTER HOUSE.—The building in which the members of a monastic, cathedral, or collegiate body met for business purposes, and in a house of monks or canons regular to hear daily a *chapter* read from their Rule or Code of life, Benedictine, or Cistercian, or Augustinian, or other.

CHARNEL HOUSE (*domus carnaria*). — An undercroft in which were deposited bones of the dead which it had been found necessary to take up, 84, 88.

CHEVET.—The east end of a church, whether semicircular, polygonal, or rectangular, 126.

CHEVRON, OR ZIGZAG (*baton rompu*).—A Norman ornament, **719**.

CHOIR (*chœur*).—That part of the church in which are the stalls of the clergy and singers. It is also used, incorrectly, in the sense of *chancel*, 36.

CHOIR SCREEN.—The screen at the west end of a choir; against it were set the return stalls, 40, 98.

CINQUEFOILED.—With five *folia* or lobes.

CLERESTORY (*claire-voie*).—The nave wall, usually of an aisled church; also the range of windows in that wall, 777.

CLERESTORY BUTTRESS.—A buttress on the outside of a clerestory wall, 398.

CLOISTER (*cloître*).—The quadrangle or garth placed normally between a nave and transept, and surrounded by three or four covered walks, **101**.

CLUSTERED COLUMNS.—A compound pier, composed of columns more or less uniform in diameter, and not of columns and small shafts; *e.g.*, Exeter, **759**.

COLLAR BEAM, COLLAR, OR WINDBEAM (*faux entrait* or *entrait retroussé*), 790.

COLONNADE.—A row of columns.

COLUMN (*colonne*), 464.

COMPASS OR SPAN ROOF, **789**.

COMPOUND PIER, 462, 466.

CONIFEROUS. — A scalloped capital with numerous subdivisions, 499.

CONSOLE.—A member of a Corinthian capital, 490.

COPING (*chaperon*).—The course of masonry which caps and throws the rain off a wall, or parapet, or flying buttress; sometimes flat or arched, but more often with a double slope.

CORBEL (*corbeau* or *cul de lampe*). —A block of stone bonded into a wall or pier and projecting from it; its function is to carry some weight; *e.g.*, a vaulting shaft, an arch, a cornice or a corbel table, an aisle roof, etc., 847.

CORBEL TABLE.—An upper course of projecting masonry at the top of a wall supported by a row of corbels, 847

CORBELLING (*tas de Charge*).—A method of construction by which masonry is built up in horizontal courses successively projecting further forward; it is employed frequently in building up the bottom courses of arches and vaults, 300, 319, 322, 430.

CORNICE (*corniche*).—The projecting course or courses of masonry or timber at the top of a wall; a corbel table is one variety of cornice, 852.

COVED.—The projecting upper portion of a screen, sloped or arched beneath, not vaulted; or the junction of a wall and ceiling when sloped or arched.

CRADLE VAULT (*voûte a berceau*).—A barrel vault, 282.

CROCKET (*crochet*).—Projecting leaves employed on gables, canopies, pinnacles, dripstones, spires, etc., 538, 953.

CROCKET CAPITAL (*chapiteau aux crochets*).—A capital whose foliage is composed wholly or mainly of volutes, 511.

CROSS-RIBBED VAULT, 295.

CROSSING (*croisée* or *carré du transept*).—That portion of a cruciform church which is between the nave, chancel, and transepts.
CRYPT.—An undercroft, usually vaulted, 84.
CUBICAL OR CUSHION CAPITAL (*chapiteau à godrons*), 404.
CUSP (*redent*).—A projecting member between any two lobes of a trefoil, quatrefoil, cinquefoil, etc., 586.
CYLINDER.—A cylindrical or circular pier; *e.g.*, Gloucester nave, 465.

D

DAGGER (*soufflet*), 613.
DEMI-BERCEAU.—A half-tunnel vault, 284, 741.
DETACHED SHAFT (*colonne adossée*).—A shaft which is not bonded into the masonry behind, 464, **481**.
DIAGONAL ARCH (*arc-ogive*).—An arch which passes obliquely through the central boss of a vaulting-bay.
DIAPER.—A pattern, usually foliated, repeated continuously to cover a wall; *e.g.*, at Lincoln and Westminster, **533**, **737**.
DISCHARGING ARCH (*arc de décharge*).—An arch constructed in the substance of a wall to take off some of the weight from a lintel or arch below, **697**.
DOGTOOTH.—An ornament most common in the thirteenth century, **720**.
DOME (*coupole*).—A vault, circular or polygonal in plan, rarely rectangular, built up in horizontal, not in radiating courses, 282, 290.
DOMICAL VAULT (*voûte bombée*).—A vault with the centre higher than the sides, but not domical in construction, 290-292.
DORMER.—An upright window in a sloping roof, usually of a sleeping-room.
DOUBLE FOLIATION, OR COMPOUND CUSPING.—A trefoil, quatrefoil, etc., has already one set of cusps; if each lobe again receives minor cusps, there is double foliation; *e.g.*, in Lincoln screen, 593, 613.
DOVECOTE (*colombier*).
DRIPPING EAVES.—Projecting thatch, lead, tiles, or slates, which drip on to the ground and not into a horizontal gutter, 847.
DRIPSTONE.—The eyebrow of a window, 453, 858.
DROP TRACERY.—Tracery, the lower part of which is below the spring of the arch which encloses a window, 581.

E

EAVES.—That part of a roof which overhangs the wall.
ELEVATION.—A view of a building, internal or external, seen directly in front, and not in perspective, **782-787**.
EMBRASURES.—The openings in a battlemented parapet between the merlons, 857.
ENGAGED SHAFT.—See *Attached Shaft*, 464.
ENTABLATURE.—The three horizontal members carried by a Classic colonnade; viz., architrave, frieze, and cornice, 430.
ENGLISH FILLING IN, 322, **325**.
ENTASIS.—The central bulge of Classic columns and of some Gothic spires, 952.
EQUILATERAL ARCH (*arc en tiers point*), 432.
EXTRADOS.—The upper surface of an arch; just as the intrados or soffit is the under-surface.

F

FALCHION (*mouchette*), 613.
FALSE BEARING (*porte à faux*).—Masonry which is not built in the axis of the supports below is said to be in false bearing, 406.
FAN VAULT (*voûte en éventail*).—A vault, all of whose ribs are of identical curve and usually separated by identical distances, 340, 380.
FEATHER-EDGED JOINTS, 391, 392 *note*, 869.
FENESTRATION (*éclairage*).—The system of lighting, or the arrangement of the windows of a building.
FERETORY.—The chapel of the chief local saint, 93.
FILLET.—A narrow band or molding, flat in face, 451.
FILLING IN, 295, 318, 325.
FINIALS.—The termination, usually foliated, of pinnacles, gables, etc.
FLAMBOYANT.—The later Gothic architecture of France, from *c.* 1400 onward, 616-620.

FLIER.—A flying buttress (*arc boutant*).

FLOWING, OR *Curvilinear*, OR *Undulatory* TRACERY.—Window tracery containing compound curves, 611.

FLUSH TRACERY.—Tracery patterns flush with the face of a wall, 425.

FLYING BUTTRESS (*arc boutant*).—A half-arch, tilted up and employed to transmit thrusts to a buttress, 397; either internal, 400, or external, 401.

FOIL (Latin *folium*, French *feuille*).—A lobe of a trefoiled, cinquefoiled, etc., arch, 437, 439.15, 16.

FOLIATED CUSP.—A cusp tipped with a leaf ornament.

FOOTING (*assiette*).—The ground-course of a wall.

FOOTPLATE, OR **Solepiece** (*blochet*).—The transverse piece to which the rafters of a roof are pinned, 791.

FOUR-CENTERED ARCH (*arc en anse de panier brisé à la clef*), 437, 439.12, 13, 14.

FREESTONE.—Any stone which is not too hard or brittle to be worked freely; usually a limestone or a sandstone.

FRENCH FILLING IN.—322, 325.

FRET.—A Norman ornament, 711.

FRIEZE (*frise*).—The middle member of a Classic entablature.

G

GABLE.—The upper triangular portion of an end wall: usually more acute than the Classic *pediment*.

GABLET.—A small gable forming the termination of a buttress; *e.g.*, Lincoln nave, 305, 51.

GALILEE, 718.

GARGOYLE (*gargouille*).—A projecting spout, usually of stone; sometimes of lead, 851.

GEOMETRICAL TRACERY.—Window tracery whose patterns contain simple curves only, not compound ones, 581.

GRADUS PRESBYTERII.—A step at the entrance to the presbytery, 31, 189.

GREATER CHURCHES.—A convenient term for churches of monks and canons, cathedrals, and collegiate churches, excluding small ones, and also excluding parish churches, 24.

GROIN, OR ARRIS (*arête*).—The sharp edge produced by the meeting of two vault surfaces, 286.

GROINED VAULTS (*voûte d'arête*), 286.

GROUND-COURSE, OR BASEMENT COURSE (*assiette, soubassement*).—The projecting external courses at the foot of a wall, 867.

GROUND PLAN.—The plan of the ground floor of a building.

GROUT.—To pump in liquid cement.

GUTTER (*chéneau, caniveau*).

H

HALF-TUNNEL (*demi-berceau*), 284, 741.

HAMMER-BEAM.—An elongated footplate or solepiece, 826.

HAUNCH (*reins*).—The haunch of an arch is the portion about one-third of the distance above the spring and below the apex of the arch. So with the haunch of a flying buttress.

HERRINGBONE (*appareil en épi*, or *en arête de poisson*, or *en feuille de fougère*).—Masonry in which the stones, or bricks, or tiles are laid diagonally instead of being bedded flat. One object of it is to get a level course, when the blocks supplied are of different lengths.

HIGH VAULT.—A convenient term for a vault resting on two clerestory walls.

HIPPED ROOF.—A gable roof sloped back.

HOGBACK.—An arched sepulchral block with what looks like a bear at each end as supporter.

HONEYSUCKLE.—See *Palmette*.

HOODMOLD (*moulure saillante contournant l'extrados des arcades*).—A string-course over an arch. See *Dripstone*, 453.

HORSESHOE ARCH (*arc outrepassé* or *en fer à cheval*), 432.

I

IMPOST.—Any horizontal support at the top of a pier beneath the spring of an arch: a capital is one species of impost.

INCURVED CONE, or *pollarded willow* capital, 499.

INTERMEDIATE ARCH.—The central arch in a sexpartite vault, parallel to the two transverse arches, 328 *note*.

INTERNAL ANGLE (*angle rentrant*).
INTERSECTING VAULT, OR CROSS VAULT.—A vault, with or without ribs; produced by the intersection of two half-tunnels, or half-barrels, 295.
INTRADOS.—The under-surface of an arch; also termed *Soffit*, 446.

J

JAMB (*jambage, pied-droit*).—The side of a doorway or window.
JOGGLED JOINTS (*arc à crossettes*), 438, **432**.

K

KEELED (*tore aminci*).—A pointed shaft, or roll, or rib, 451.
KEYSTONE (*clef d'arc* or *clef de voûte*) of an arch or vault, 303, 430.
KINGPOST (*poinçon*), 799.
KNIFE-EDGE RIBS, 371.

L

LANCET (*arc à lancette*).—An acutely pointed arch, or a window with an acutely pointed head, 432.
LAVATORY.—Sometimes the trough near a refectory door used for washing the hands before meals. Sometimes the trough in a sacristy.
LEAN TO ROOF *appentis*
LEPER'S WINDOW.—A term which should be abandoned for *low side window*, 679.
LICHGATE.—The covered gateway at the entrance to a graveyard.
LIERNE (*branche d'ogives secondaire et accessoire*).—A rib which does not start at the spring of a vault, nor rise to the central boss, but runs across from rib to rib. In French *lierne*=ridge rib, 330.
LINTEL (*linteau*).—A horizontal piece of timber or block of stone; *e.g.*, over a doorway, **697**.
LOBE.—A hollow between two cusps, 585.
LOFT.—A raised platform, *e.g.*, on the top of a rood screen. Or a chamber high up, *e.g.*, St. Michael's loft, Christchurch, **45**.
LOGICAL PIER, 467.
LONGITUDINAL RIDGE RIB, OR AXIAL RIB, 327.
LOUVRE OR LUFFER BOARDS, OR SOUND BOARDS (*abat-son*).—Boards sloping downwards, placed in belfry windows.
LOW SIDE WINDOW, 673-696.

M

MERLON.—The merlons are the solid parts of a battlemented parapet between the openings or *embrasures*, 857.
MINSTER.—Properly a monastery. Then a monastic church. Then a cathedral or collegiate church, which is not monastic, *e.g.*, York and Beverley minsters; or even a parish church, 36.
MISERICORD.—The hinged seat of a stall.
MOLDINGS (*moulures*).—A suite of alternating hollows, rolls, and other members, 451.
MONIAL.—Another name for *mullion*, 572.
MORTICE.—The slot or socket into which a tenon fits, **790**.
MULLIONS (*meneaux*).—The vertical bars between the lower lights of a window, 572.

N

NAILHEAD, 709.
NARTHEX.—A porch extending across the west end of a church, 62.
NAVE (*nef*).—Architecturally, the western limb of a church. Ritually, the parts of the church west of the choir screen or rood screen, 38.
NEWELL (*noyau*).—The central post of a circular staircase or vice, 886.
NICHE.—An ornamental recess in a wall.

O

OBLONG (*barlongue*).
OCTOPARTITE VAULT.—A vault with eight cells: *e.g.*, the treasury of Canterbury cathedral.
OGEE ARCH (*arc en accolade*), 438.
OGEE MOLDING.—A compound curve which is first concave and then convex, or first convex and then concave.
OPPOSING THRUSTS, 408.
ORDERS of an arch are the sub-arches of which a compound arch is composed, 442.

ORDERS OF TRACERY.—Members of the tracery which lie in different planes, 590.

OSTIA PRESBYTERII.—The doorways north and south of the westernmost bay of a presbytery, 30.

P

PALMETTE, OR *Anthemion*, OR *Honeysuckle*.—Greek, Roman, and Romanesque ornament, 489, 711.

PANEL VAULT.—A vault constructed in panel, with no constructional ribs, 336, 380.

PARAPET (*parapet* or *balustrade*).—A low wall in front of a gutter or window, 852.

PARCLOSE SCREENS.—Side screens of a chancel, or enclosure screens of a chapel.

PARVISE.—An inaccurate term for a chamber above a porch, 727.

PEAR-SHAPED MOLDING, 451.

PEDIMENT (*fronton*).—In Classic architecture the name for a gable, which is less acute than is usual in mediæval work.

PENDANT (*clef pendante*).—An elongated boss, 307.

PENDANT POST.—A wall-post not supported by a corbel, 835.

PENDENTIVES.—Concave triangular spandrels between the arches which support a dome.

PERIAPSIDAL AISLE (*carolle* or *déambulatoire*).—One which encircles a semicircular or polygonal apse, 114.

PIER.—The generic name for any support rising from the ground and supporting an arch or arches, 462.

PIER-ARCADE.—A row of arches carrying a wall and supported by substantial piers, and not, as in a cloister walk, by light shafts, 462. See *Arcade*, 455 *note*.

PILASTER.—A flattened column; externally it forms a buttress, 469.

PILASTER STRIP, 388.

PILLAR (*pilier*).—A synonym of pier, except that it cannot be employed for such massive supports as those of the arches of a bridge. It is better not to employ it at all in mediæval architecture.

PINNACLE.—A light spirelet or cupola on a buttress, in a parapet, etc., 394.

PISCINA.—A drain in the wall or floor near an altar.

PITCH OF ROOF.—The inclination of a roof on each side from the horizontal, 842.

PLANES OF TRACERY, 590, 591.

PLATE.—A horizontal piece of timber laid on a wall. If it is set lengthwise it is a *wall-plate*; if transversely it is a *footplate*, 791.

PLATE TRACERY.—An early form of tracery in which apertures were cut into slabs to form circles, etc., 579 *note*.

PLINTH (*socle*).—The member of a pier which rests on the ground and carries the base, 549.

PLOUGHSHARE VAULTING, 298.

POINTED ARCH (*arc brisé* or *arc aigu*), 432.

POINTED TRIFOLIATED ARCH, 437.

POLLARDED WILLOW CAPITAL, 499.

PORTE À FAUX.—See *False bearing*.

POST.—An upright piece in a roof; *e.g.*, king-post, queenpost, wall-post, pendant-post.

PRESBYTERY.—That part of a chancel which is east of the choir, 29.

PRIEST'S DOORWAY.—A side doorway in a chancel, 706.

PRINCIPAL RAFTER, OR PRINCIPAL (*arbalétrier*), 796, 839.

PRIORY.—A religious house governed by a prior, not by an abbot.

PROCESSION AISLE.—In its specific sense this is the aisle at the back of the high altar. See *Ambulatory*, 88, 100, 114.

PURLIN, 796.

PUTLOG HOLE.—A hole left in a wall, or a hole from which a block has been withdrawn, to receive one end of one of the scaffolding poles or *putlogs* on which planks are to be laid to form a platform.

Q

QUADRIPARTITE VAULT.—One with four cells, 295.

QUARRY (*carrière*).

QUATREFOIL (*quatrefeuille*).—A pattern with four foils or lobes.

QUEENPOSTS (*jambette*).—A pair of upright posts resting on a tie-beam, 799.

QUINQUEPARTITE VAULT.—One with five cells.

QUIRK.—A small angular notch.

QUOINS.—Large blocks employed at the external corners of a nave, aisle, tower, etc., for extra strength.

R

RADIATING CHAPELS (*chapelles rayonnantes*).—Those to the south-east and north-east of a periapsidal chancel or aisle, 114.

RAFTERS (*fermettes, chevrons, rampants*).—Pieces of timber sloping from the ridge of a roof to the wall-plate, 789.

RAGSTONE.—Stone which is found and employed in thin layers.

REAR ARCH, 580.

REBATE.—A rectangular sinking along the edge of a beam of wood or a block of stone, 319, 334.

RECESSED ORDERS OF AN ARCH (*ressauts, ressauts successifs*).—Sub-arches are recessed when each recedes beneath the sub-arch above it; in other words, when each sub-arch is broader than the sub-arch beneath it, 442.

RECTILINEAR TRACERY.—Window tracery in which straight lines are largely substituted for curves, 641.

RELIEVING ARCH (*arc de décharge*).—A *relieving* or *discharging* arch is constructed above a lintel or above another arch to relieve it of some superincumbent weight, 697.

RESPOND.—A half-pier bonded into a wall and carrying one end of an arch.

RETICULATED TRACERY, 622.

RETICULATED VAULTS, 331.

RETURN.—(1) The western row of stalls which runs north and south. (2) That portion of a dripstone which, after running downwards, turns off horizontally.

REVEAL.—The external part of the jamb of a doorway or window, between the door or glass and the outer surface of the wall.

REVESTRY.—A synonym for *Vestry* or *Sacristy*.

RIB, 295 *note*.

RIDGE BEAM (*poutre faîtière*).—A horizontal piece to which, in the latter roofs, the tops of the rafters were pinned, 796.

RIDGE RIB (*tierne*).—A rib which follows the ridges of a vault, whether longitudinal or transverse. In France it is termed *tierne*, 327 *note*.

ROMAN (*romain*).

ROMANESQUE (*roman*).—That style of architecture which is intermediate in Western Europe between Roman and Gothic architecture. Anglo-Norman or Norman is one of its local varieties.

ROOD.—The crucifix; *i.e.*, a cross on which is a figure of the Saviour.

ROOD SCREEN.—A screen, with the rood above it, which was placed one or two bays west of the choir screen in churches of monks and regular canons, 40.

ROOD LOFT.—A platform, fenced by parapets, on the top of a rood screen.

ROOF (*comble*).

ROOFING SHAFT.—A wall-shaft which carries one of the ends of a wall-arch or of a tie-beam.

ROUE TOURNANTE.—A circle of window tracery filled up entirely with *falchions*, *e.g.*, at Carlisle, 633.

RUBBLE (*moellon*).—As opposed to *ashlar*, it is blocks which have not been hewn or squared; as opposed to *rag*, it does not consist of thin flat layers.

S

SACRARIUM.—An unnecessary synonym for *sanctuary* or *presbytery*, 29.

SACRISTY.—A vestry, 215.

SACRING BELL.—A bell which was rung when the *Ter Sanctus* was reached in the Mass, 684.

SADDLE BARS.—Iron cross bars in a window to which the glazier attached the leaded quarries.

SADDLE ROOF (*toit à double rampant*).—A gable or span roof, especially of a tower.

SANCTUARY.—Synonymous with *presbytery*, which is a preferable term, 29.

SANCTUS, OR SANCTE, OR SAUNCTE BELL.—A bell which was rung at the Elevation of the Host in the Mass, 684.

SANCTUS BELL-COTE.—A turret to shelter the sanctus bell, usually built on the eastern gable of the nave, 692.

SANDSTONE (*grès dur*).

SCALLOPED CAPITAL (*chapiteau à godrons*).—A subdivided cushion capital, 494.

SCANTLING.—The breadth and depth of a beam, not the length.

SCISSORS BEAM ROOF, 792.

SCOINSON ARCH.—A synonym for the *rear arch* of a window, 580

SCOTTISH CROWN, 937.

SCROLL MOLDING.—Incorrectly termed *roll molding*. A roll resembling a *scroll* of parchment with the edge overlapping, **544**.

SECTION.—A *transverse section* shews a building, *e.g.*, Ely, Chichester, Bristol, Southwark, Wells, Canterbury, as if it were cut across vertically, and one of the sections removed, **403-415**. A *longitudinal section*, *e.g.*, of Old St. Paul's, is a continuous *elevation*, **5**.

SEDILIA. — The seats south of an altar occupied by the celebrant and his servers during part of the Mass.

SEGMENTAL ARCH (*arc surbaissé* or *en segment*), 432.

SEMIDOME (*cul de four*).

SET-OFFS, OR *Offsets*.—The projecting slopes of a buttress, 393.

SEVERY.—An unnecessary synonym for a bay of a vault.

SEXPARTITE.—Strictly speaking, it is applicable to any vault with six cells; *e.g.*, that over the apse of Westminster abbey, **314**; but in common usage it is restricted to a quadripartite vault crossed by an additional intermediate transverse arch which divides each bay into six cells, 321.

SHAFT (*colonnette*).—(1) A small slender column; (2) (*fût*) that part of a column which is between the base and the capital.

SHOULDERED OR CARNARVON ARCH, 437.

SILL OF WINDOW (*appui*).

SKEWBACK.—A voussoir whose bottom surface is horizontal and whose top surface slopes, 300, 432.

SLEEPER WALL. — An underground wall built between two piers, or two walls, or a pier and a wall, to keep them from shifting.

SOFFIT (*intrados*).—The under-surface of an arch, 446.

SOLEPIECE.—Better termed *footplate*, on the analogy of *wall-plate*, 791.

SOLID SPRINGERS.—Two or more vaulting ribs which, instead of being built separate, are built solid at the foot, 301.

SOMERSET TRACERY.—Perforated plates of stone; a substitute for louvre boards; *e.g.*, North Petherton, 888.

SOUND HOLES.—An inaccurate term for small traceried openings lighting a ringers' chamber, 671.

SPANDREL (*écoinçon*).—(1) The surface between two arches; (2) between a doorway and a rectangular dripstone; (3) between the fans of a fan vault, etc., 349.

SPAN ROOF.—A span, or compass, or saddle roof has two slopes; a lean-to has but one.

SPIRELET (*clocheton*).

SPLAY (*ébrasement*).—A chamfered jamb of a window, 579.

SPRINGERS (*retombée*).—The bottom courses of an arch or vault.

SPUR (*griffe*).—An ornament on the corner of a plinth, 506, 551.

SQUINCH (*trompe*).—Masonry built across the top corners of a tower to support the oblique sides of a spire, 929, 942.

SQUINT.—An opening pierced through a wall or pier to afford a view of an altar, or the celebrant at an altar, 212

STEEPLE.—The combination of tower and spire, 927.

STELLAR VAULTS.—Those with star-shaped patterns composed of lierne ribs, 332.

STILTED ARCH (*arc surhaussé*), 432, **431.2**.

STOP.—An ornament terminating a dripstone or hoodmold, 859.

STRAINING ARCH.—An arch inserted between two piers to prevent them from bulging inwardly, 454.

STRING-COURSE, OR STRING (*cordon* or *bandeau*). — A projecting stone band, internal or external, which is horizontal, except when it has to pass above or below windows, etc., 863.

STRUT (*contrefiche*).—A piece of timber inserted between two timbers to prevent one or both from bulging; a strut is in a state of compression, as contrasted with a *tie*, which is in a state of tension, 791.

SUPERABACUS (*dosseret*). — An additional slab set on the top of an abacus, 488.

SUPERMULLION.—A mullion which does not start from the sill of a window, but from the apex of some arch in the tracery, 657.

T

TABERNACLE (*dais*).—An enriched canopy.

TABLE.—Any flat horizontal band on a wall: but the term is now restricted to an external table at the top of a wall, forming a corbel table or a cornice.

TAS DE CHARGE.—When the lower courses of an arch or rib are not built with radiating but with horizontal voussoirs, they are said to be in *tas de charge*. These are bonded into the wall, 300.

TEMPLET.—A plate of metal cut as a guide to the mason in carving moldings, etc.

TENON.—The projection left at the end of a piece of timber to fit into a mortice, **790**.

THREE-CENTERED ARCH (*arc en anse de panier*), 430.

THROAT (*gorge*).—A string or the set-off of a buttress is said to be throated when its lip is undercut to stop drip, 866, 869.

TIE.—A piece of timber attached to two other pieces of timber to stop them from spreading. It is therefore in tension, whereas a *strut* is in compression.

TIE-BEAM (*tirant* or *entrait*), 796-815.

TIERCERON (*tierceron*).—A rib which springs from the same point as the transverse and diagonal arches, but rises, not to the central boss, but to some point on one of the ridge ribs, 328.

TOOTH ORNAMENT, 709, 711.

TORUS (*tore, boudin*).—A semicircular roll.

TRABEATED.—In trabeated construction openings are spanned by lintels, not by arches, 430.

TRACERY (*remplage*).—The plates or bars in the head of a window above the mullions, 581.

TRANSEPT (*transept, croisillon*).—The north or south limb of a cruciform church.

TRANSOM.—A stone cross bar in a window, 572, 657.

TRANSPARENT TRIFORIUM (*triforium a claire-voie*).—One in which the triforium arcade is glazed, 756.

TRANSVERSE ARCH (*arc doubleau*).—An arch which is at right angles to the wall, 299.

TRANSVERSE RIDGE-RIB, 328.

TREFOIL (*trèfle*).—With three foils or lobes.

TREFOILED ARCH, 437.

TRIAPSAL CHEVET.—With three parallel eastern apses, 132.

TRIFORIUM.—(1) The chamber above an aisle vault and beneath the roof. (2) The arcade in front of the chamber, 735.

TRIPARTITE.—A church whose choir is separated both from the presbytery and the nave by arches; *e.g.*, Stewkley, **186**.

TRIPLE ROLL BASE, 551.

TRUMEAU.—A pier supporting the centre of a lintel, **699**.

TUDOR FLOWER.—An upright, flat, conventional flower much used in cresting, **107**.

TRUSS (*ferme*).—A framework of timbers, 792.

TRUSSED RAFTER ROOF, 789-795.

TUNNEL VAULT (*voûte à berceau*), 282, 292 *note*.

TYMPANUM.—The space between the lintel of a doorway and the arch above it, **697**.

U

UNDERCROFT.—A low vaulted building, often underground, supporting another story.

UNDULATORY TRACERY, 611-640.

V

VAULT (*voûte*).—A stone ceiling or roof, 286.

VAULTING SHAFTS.—A shaft or group of shafts rising from the pavement, or from a corbel or capital, to support ribs of a vault, 470.

VESICA PISCIS (*en amande*).—A pointed oval: or it may be ogee below and pointed above, 622.

VESTRY.—Synonymous with *sacristy*, 216.

VICE.—A spiral staircase, the steps of which wind round a newel, 881.

VOLUTES.—The projecting spiral ornaments at the corners of a Corinthian capital; also the crockets of early Gothic foliated capitals, 511.

VOUSSOIR (*claveau*).—One of the blocks composing an arch, 430.

VOÛTAIN.—One of the blocks of a course of ashlar in the web of a vault, 319 *note*.

W

WAGON ROOF (*voûte à berceau*), 822.

WAGON VAULT.—An unnecessary synonym for tunnel, or barrel, or cradle vault, 282.

WALL-ARCHES (*formerets*). — The longitudinal arches of the bays of a vault, 299.

WALL-PASSAGE (*chemin de ronde*).

WALL-PIER. — The masonry between two windows, 386.

WALL-PLATE.—The timber laid longitudinally on the top, or embedded in the top, of a wall, 790.

WALL-POST.—An upright post resting on a corbel and supporting a hammer-beam or the end of a tie-beam, 802.

WATCHING LOFT.—A raised platform from which a shrine was watched, **77**.

WATERHOLDING BASE, 550.

WAVE MOLDING.—It consists of curve and countercurve.

WEB.—That part of a vault which is between the ribs, 295, 322-327.

WINDBEAM. — A collar-beam which is in compression, 790.

WHEEL WINDOW, **670**.

Z

ZIGZAG (*baton rompu*).—A Norman ornament, also known as *chevron*, 709.

II.—FRENCH

A

Abaque—Abacus.
Abat-son—Louvre boards.
Abside—Apse.
Absidiole—Minor apse.
Accolé—Put side by side.
Accosté—Flanked.
Aigu—Sharp, pointed.
Ajour—Open
Ajouré—Perforated.
Alléger—To lighten.
Amincir—Reduce in dimensions.
Angle rentrant—Internal angle.
A pans—Straight-sided.
Appareil—Masonry.
Appareil en épi ou arête de poisson ou en feuille de fougère—Herringbone masonry.
Appui—Support, sill of window.
Après-coup—Afterthought.
Après la pose—After the masonry was put up.
Arc à crosettes—Arch with joggled joints.
Arc aigu, or arc brisé—Pointed arch.
Arc boutant—Flying buttress.
Arc de décharge—Discharging or relieving arch.
Arc doubleau—Transverse arch.
Arc en accolade—Ogee arch.
Arc en anse de panier—Three-centered arch.
Arc en anse de panier brisé à la clef—Four-centered arch.
Arc en mitre—Straight-sided arch.
Arc en plein-centre—Semicircular arch.
Arc en tiers-point—Equilateral arch.
Arc formeret—Wall-arch.
Arc lancette—Acutely pointed arch.
Arc ogive—Diagonal arch; often wrongly employed as equivalent to *pointed arch.*
Arc outrepassé ou en fer à cheval—Horseshoe arch.
Arc rampant—Arch whose sides are of unequal length.
Arc surbaissé ou bombé ou en segment—Segmental arch.
Arc surhaussé—Stilted arch.
Arch trilobé—Trefoiled arch.
Arc Tudor—Four-centered arch.
Arcade—Pier-arch.
Arcature—Arcading.
Arcatures entrecroisées—Intersecting arcading.
Archères—Window slits.
Ardoise—Slate.
Arêtiers—Voussoirs of diagonal ribs.
Armature—Framework.
Assiette—Footing of wall.
Assise—A course of masonry.
Astragale—The molded necking which separates the capital from the shaft.

B

Bague—Band or annulet.
Baie geminée—Opening divided in two by a small central support.
Balustrade—Open parapet.
Banc—Bench.
Bandé entre—Connecting.
Bandeau—Band, string-course.
Barlongue—Oblong.
Bas coté—Aisle.
Basculer—To totter: to leave the vertical.
Baton rompu—Zigzag.
Beffroi—Belfry, bell-tower.
Bénitier—Holy water stoup.
Berceau—Tunnel or cradle vault.
Berceau brisé—Pointed tunnel vault.
Berceau transversal—A tunnel vault at right angles to the axis of a nave, transept, or aisle.

Berceau en plein-centre—A semicircular tunnel vault.
Beton—Concrete.
Biais—Askew, slanting.
Biseau—Chamfer.
Blocage—Rubble.
Boudin—Roll, bowtell, torus.
Boutisses—Bonding stones.
Branche d'ogives—Diagonal rib.
Branches d'ogives secondaires et accessoires—Liernes.
Butée—A wall which is abutted.

C

Caniveau—Gutter.
Cannelé—Fluted.
Cannelure—Semicircular hollow
Cantonné—Flanked.
Carolle—Periapsidal aisle.
Carré du transept—Crossing.
Carreau—Square, pavement tile.
Carrière—Quarry.
Cavet—Hollow, quarter of circle.
Chainage—Horizontal ties of wood or iron.
Chanfrein—Chamfer.
Chantier—Workshop.
Chaperon—Coping.
Chapiteau godronné—Scalloped capital.
Charpente—Timber, woodwork.
Châsse—Shrine.
Châssis—Framework, frame.
Chemin de ronde—Wall-passage.
Chéneau—Gutter.
Chevet—Eastern exterior of church.
Cintre—Centering, arch.
Ciseau—Chisel.
Claire-voie—Openwork, clerestory.
Claveau—Voussoir of arch.
Clef—Keystone.
Clef pendante—Pendant.
Cloche—Bell.
Clocher—Bell-tower.
Clocheton—Spirelet.
Cloison—A thin wall carrying but little weight.
Cloître—Cloister.
Collateral—Aisle.
Colombier—Dovecote.
Colonne adossée—Detached shaft.
Colonne engagée—Attached shaft.
Colonnette—Shaft.
Comble—Roof.
Congé—The lower projecting part of a classical column.
Contrebuter—To provide counter abutment.
Contrefort—Buttress.
Corbeau—Corbel.
Corbeille—Bell of capital.
Cordon—String-course.
Cornice à modillons—Cornice with corbels of wood design.
Couloir—Passage.
Coupe transversale—Cross section.
Coupole—Dome.
Créneau—Battlement.
Crénelage à merlons ajourés—Battlement.
Crête—Cresting.
Creuser—To hollow.
Crochet—Crocket, volute.
Croisée—Crossing.
Croisillon—One arm of a transept.
Croissée d'ogives—Two diagonal arches which intersect at their centres.
Cul de four—Semidome.
Cul de lampe—Corbel, bracket.
Culée—Abutment, buttress.

D

Dais—Stone tabernacle over a statue.
Dallage—Pavement.
Dalle—Flagstone.
Damier—Chessboard pattern.
Déambulatoire—Periapsidal aisle.
Déborder sur—To overhang.
Degré—Step.
Dent de scie—Sawtooth.
Deux tores accolés—Double-roll base.
Diaphragme—A gabled wall carried by a transverse arch.
Doubleau—A transverse arch.

E

Ebrasement—Splay.
Ecailles—Scales.
Echelle—Scale.
Eclairage—Lighting.
Ecoinçon—Corner, spandrel.
Ecoulement—Flow away.
Egout—Drain.
Empatement—Footing of wall.
Emplacement—Situation, position.
En amande—Almond-shaped or *vesica piscis.*
En délit—At right angles to its bed.

En entonnoir—Funnel-shaped.
En saillie—Projecting.
Encadrant—Framing, enclosing.
Enchevêtrer—Intersect.
Encorbellement—Corbelling.
Enduit—Plaster.
Entablement—Entablature.
Entrait—Tie-beam.
Entrelacs—Interlacings.
Epannelage—Roughing out a molding or an ornament.
Epauler—Strengthen, support.
Epure—Working drawing.
Epurer—To refine.
Escalier en vis—Circular staircase or vice.
Etage—Stage, story.
Etai—Stay.
Etresillon—Stay.
Etrésillonnement—Stiffening.
Evasement—Splay.
Evider—To produce a void, to lighten.
Exhaussement—Raising.
Extrados—The upper or outer surface of an arch, dome, or vault.

F

Faire corps avec—To be bonded in.
Faîtage—Ridge.
Faitière—Tiling of a roof ridge.
Falchion—Mouchette.
Fenêtre—Window.
Fenêtres hautes—Clerestory windows.
Feuille d'eau—Waterleaf.
Flèche—Spire.
Fleuron—Foliated finial.
Formeret—Wall-arch.
Frise—Frieze.
Fronton—Pediment.
Fût—Shaft.
Fût galbé—A shaft with entasis.

G

Galbe—Bulge, entasis.
Galerie—Gallery, passage.
Gargouille—Gargoyle.
Girouette—Weathercock.
Gorge—Semicircular hollow, more or less.
Griffe—Spur.

H

Hors d'œuvre—Not part of the main building.

I

Imbrications—Shingle.

J

Jambage—Jambs supporting a lintel.
Jubé—Rood screen.
Jumelle—Twin.

L

Labyrinthe—Maze depicted on a pavement.
Laie—Toothed hammer.
Lancette—Lancet window or arch.
Lanterne des morts—Turret in a graveyard, containing a light; also called *fanal*.
Larmier—Projecting upper member of a cornice.
Lierne—Ridge rib.
Linteau—Lintel.
Lit—Bed.
Lucarne—Dormer window.
Lunette—The portion of wall beneath a wall-arch or formeret; also a window pierced in a vault.

M

Marche—Step.
Marteau—Hammer.
Mascaron—Mask.
Massif—Block or mass of masonry.
Meneau—Mullion.
Méplat—Fillet.
Montant—Jamb of a doorway or window.
Moulure—Molding.
Moulure saillante contournant l'extrados des arcades—Hoodmold.
Mur plein—Solid wall.

N

Nef—Nave.
Niveau—Level.
Noyau—Core, newel of vice.

O

Œil de bœuf—Small circular window (*oculus*).
Ogive—A diagonal arch or rib. It is wrongly employed by many French writers as equivalent to "pointed arch."
Ordonnance—Arrangement or disposition.
Ossuaire—Charnel house.
Outil—Tool.

P

Pan—Side of a spire or a length of wall.
Panneau—Panel.
Parement—Face of a wall.
Paroi—Wall.
Parpaing—A wall built with through stones.
Parvis—An enclosed space in front of a church.
Pavillon—Small pyramidal roof.
Perron—Flight of steps.
Petit appareil—Masonry of small blocks.
Pieds-droits—Jambs supporting an arch.
Pierre de taille—Ashlar.
Pignon—Gable.
Pilier—Pier, pillar.
Pilier composé—Compound pier.
Pilier en faisceau de colonnettes—Pier with detached shafts.
Pilotis—Piles.
Placage—Veneer.
Plafond—Ceiling.
Plat—Flat.
Platebandes appareillées—Flat arch with radiating voussoirs.
Pomme de pin—Pomegranate.
Porte, portail—Doorway.
Pourtour—Circumference.
Poussée—Thrust.
Pratiqué—Contrived, built.

Q

Quatrefeuille—Quatrefoil.

R

Racheter—To make up for.
Rainure—Groove.
Rayon—Radius.
Rayonnant—Radiating.
Retable—Reredos.
Redent—Cusp.
Reins—Haunch.
Remaniement—Re-modelling.
Remplages des meneaux—Window tracery.
Renforts—Abutting members.
Repentir—Change of intention.
Réseau—Network, system, tracery.
Ressaut—Projecting stage, projection, recessed order of arch.
Ressauts successifs—Recessed orders of arch.
Retombée—The spring or lower courses of an arch or vault.
Retraite—A story in retreat.
Rez-de-chausée—Ground floor.
Rinceau—Leaf scroll.

S

Saillant—Projecting.
Saillie—Projection.
Salle—Hall.
Sanctuaire—Presbytery.
Seuil—The sill of a doorway.
Socle—Plinth of pier or ground-course of wall.
Sommier—Springer.
Soubassement—The lower part of a wall.
Soufflet—Dagger (in tracery).
Strie—Hatching.
Suraigu—Much pointed.
Surplomber—Overhang.
Sur son lit—A block placed as it lay on its bed in the quarry; the opposite of *en délit*.

T

Taille—Dressing of stone.
Tailloir—Abacus.
Talus—Slope.
Tambour—The drum of a dome, tower, or steeple.
Tas de charge—Lower courses of an arch or rib in horizontal beds.
Tassement—Settlement.
Têtes plates—Beakhead.
Toit à double rampant—Compass or gabled roof, or gablet of buttress.
Toit à double rampant perpendiculaire du toit principal—A compass roof set transversely; a *pavillon*.

Toit en appentis—A lean-to roof.
Toiture—Roof.
Tore ou boudin—Torus, bowtell.
Tore aminci—Keeled roll.
Tour—Tower, lathe.
Tours couvertes en batières—Saddle-back towers.
Tourelle—Turret.
Tracé—Plan, diagram.
Trait—Drawing, shape, form.
Transept—The pair of cross-arms of a church.
Trapu—Squat.
Travée—Bay.
Tréfle—Trefoil.
Tribune—Gallery.
Tribune latéral—Upper aisle.
Triforium à claire-voie—Transparent triforium.
Trompe—Squinch.
Tronçon—Slice, section.
Trumeau—Central support of lintel of doorway.
Tuiles—Roof tiles.
Tuyaux de descente verticaux—Spout.

V

Vaisseau central—Nave or central aisle.
Vantail—Folding door.
Vides—Voids.
Voussures—Recessed orders of an arch; the sides of a doorway-arch.
Voûte—Vault.
Voûte d'arête bombée—Barrel vault.
Voûte en berceau—Cradle or tunnel vault.
Voûte en quart de cercle—Demi-berceau.

F. B. Yapton, Sussex.

Introduction to English Church Architecture

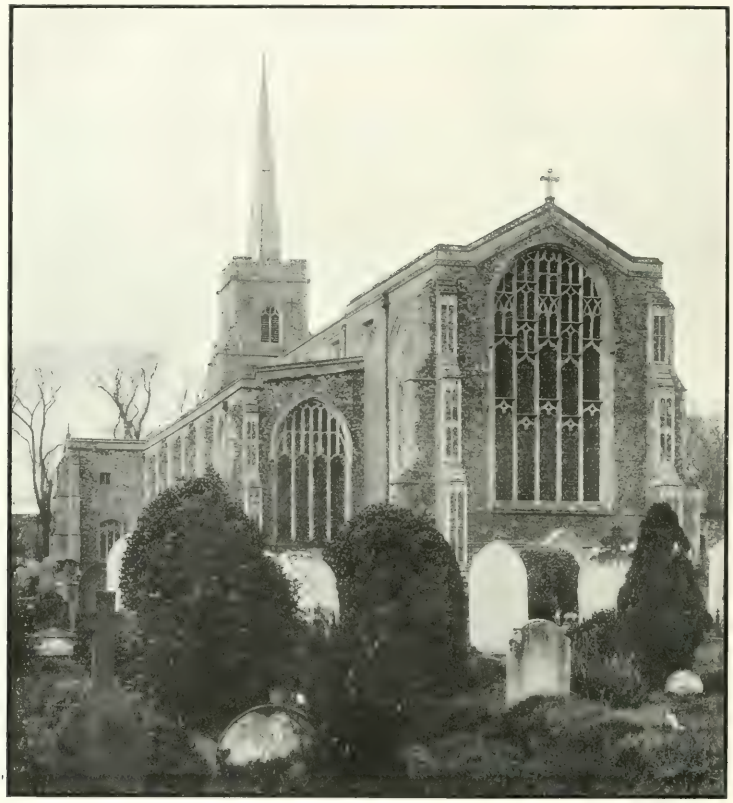
CHAPTER I

CHURCHES OF MONKS AND CANONS

ENGLAND in the old days was a land of churches; they abounded alike in town and country. In the older and larger towns the churches were very numerous. Winchester, with a population of not much more than 6,000 in King Stephen's time, not only was plentifully supplied with parish churches, but possessed in addition three great monastic churches, St. Swithun's, the New Minster, and St. Mary's or Nun's Minster; of these important churches, only the first, the present cathedral, survives; it was attached to a monastery of Benedictine monks. York, with a population in 1377 of about 11,000, contained a cathedral, four churches of abbeys and priories, five friars' churches; and forty-five parish churches, in addition to numerous chapels. The City of London, even after the great fire of 1666 and many recent demolitions, remains crowded with churches. Lincoln, before the Reformation, had forty-nine churches, which in 1549 had dwindled down to thirteen.[1] Norwich has lost twenty, but retains thirty-seven parish churches. The older towns were cut up into parishes very diminutive in area. At York in 1377 there was on the average a parish church for every 244 people, of whom probably less than half would be adults; when the York churches were first built, the parishes would probably not average half that number. Cathedral cities were in those days as remarkable for the number of their parish churches as they are now for the number of their public houses.

[1] The exact number of parish churches in Lincoln is hard to calculate. Only some ten were held by institution; the rest were impropriate benefices, served by curates. The returns in the Taxation of 1291 and the Valor of 1534-5 are very incomplete.—A. H. T.

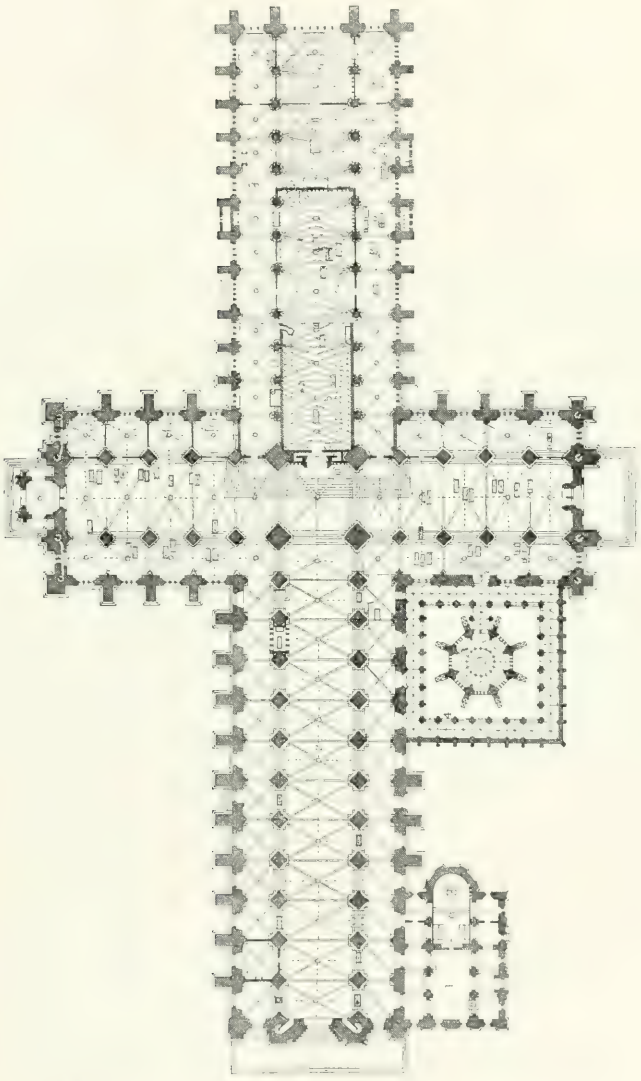
Where a town was small, it might have but one parish church, though this would be a large one, *e.g.*, St. Margaret's, Lowestoft. If it subsequently grew into a large town, as did Boston[1] when it was the chief port in England for shipping wool, it might still have but one church, but that would be, as at Boston, of vast scale; or,



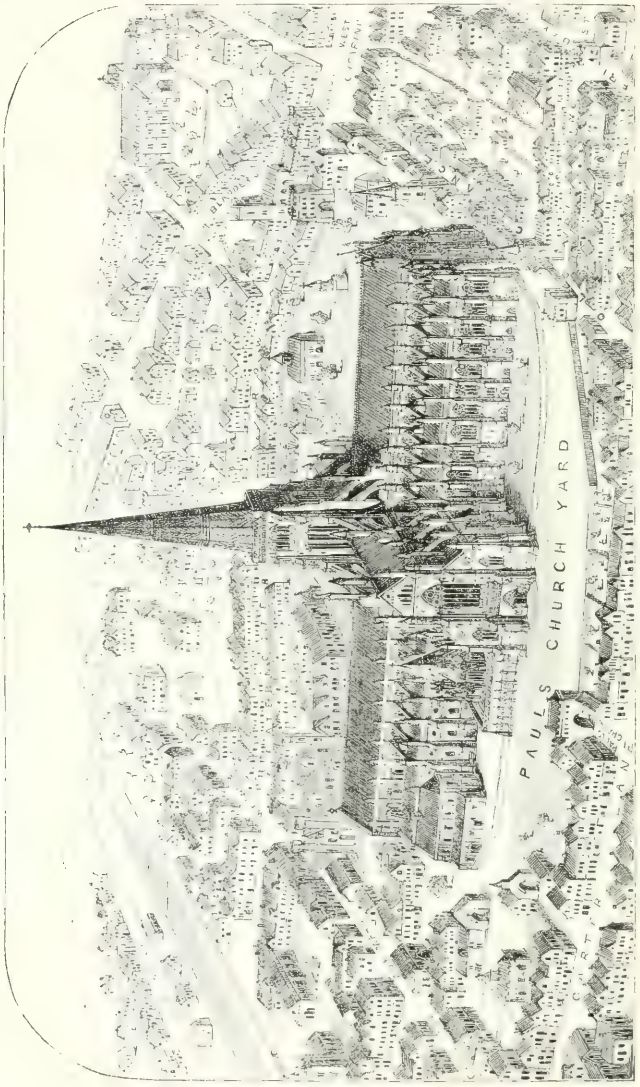
M. C. St. Margaret's, Lowestoft

as at Lynn, a chapel of ease might be added, St. Nicholas, itself one of the largest town churches in England. If it was a new town, or transferred to a new site, as

[1] In 1280 the customs paid at the port of Boston on the exportation of wool exceeded those of any other town in England.



F. E. P. Old St. Paul's

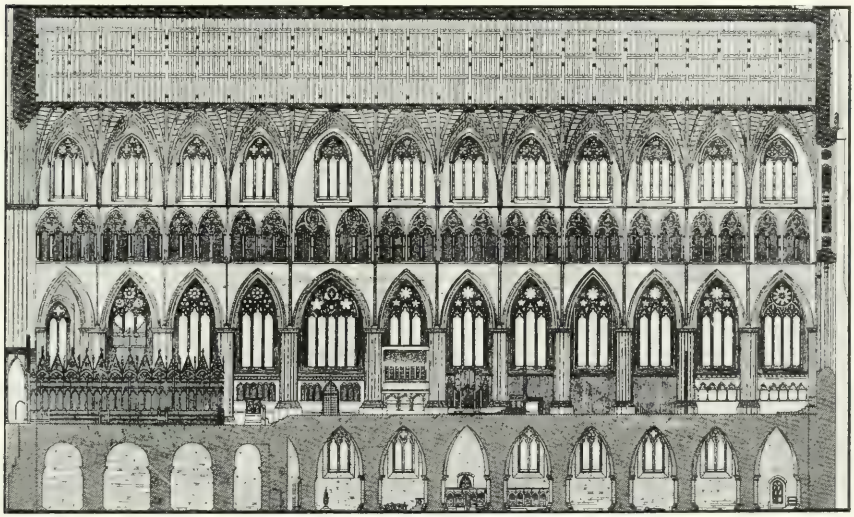


Old St. Paul's from South-east

E. B. L.

was Winchelsea, it would start existence with an immense church; or it might have to be satisfied at first with one or two chapels of ease, which in time would grow into important churches, *e.g.*, at Hull, where Holy Trinity, formerly but a chapel of ease to the village church of Hessle, was rebuilt on a magnificent scale in the fourteenth century.

Nor was it different in the country; in the thirteenth century there must have been considerably over ten thousand churches in England.[1] Probably these were nearly as numerous then as now; for though many new churches have been added in modern times, yet on the other hand many ancient ones have disappeared; it is



E. B. F. Old St. Paul's: North Side of Chancel and Crypt

known that in the county of Lincolnshire alone there were at least 651 mediæval churches and chapels between 1218 and 1362; of these no less than seventy-seven have ceased to exist. In Suffolk there are still some 550 ancient churches; there are still upwards of 650 in Norfolk, but no less than 128 have disappeared.[2] The distribution of the country churches naturally varies greatly. In districts which had long been settled and under tillage, parishes were small and numerous and close together. Where there was little or no tillage, population was scanty, the parishes

[1] There are still over 10,500 churches in England (excluding chapels) of mediæval foundation.

[2] Rev. Dr Cox gives a list of these in *Churches of Norfolk*, i. 46.

were few, large and far apart; such a parish is that of Worth, in the great forest which once stretched across from Kent to Dorset; and Helmsley in the Cleveland moorland.

Nowadays, with a few exceptions such as Westminster abbey and St. George's, Windsor, there are but two categories of churches; either they are parish churches or they are cathedrals; in the latter is the throne of the bishop, whose authority, however, in his cathedral is practically nil, except at St. David's,

C. C. Beverley Minster from South-west

Southwell, and Southwark. But in mediæval days, up to the Reformation, there were many varieties of churches in England. The vast majority, whether in town or country, were parish churches, built mainly for congregational use. But there was a second class of churches, of far greater scale and importance, which were not designed for congregational use, or only so to a very limited extent. These latter were built in order that, instead of one daily service, little more than which was on most days customary in a parish church, there might be a long round of services by night as well as by day; they were

churches in which at short intervals prayer and praise were ever being offered to God; churches, we may say, of Perpetual Adoration. For the performance of these services a residential choir was needed, as well as one or more priests to administer the Eucharist. These choirs were provided in various ways.

In Italy, *c.* 520, St. Benedict founded the **Benedictine** order of monks to take charge of the services in his churches; till the eleventh century this was the chief and almost the only order of monks in Western Europe.[1] At

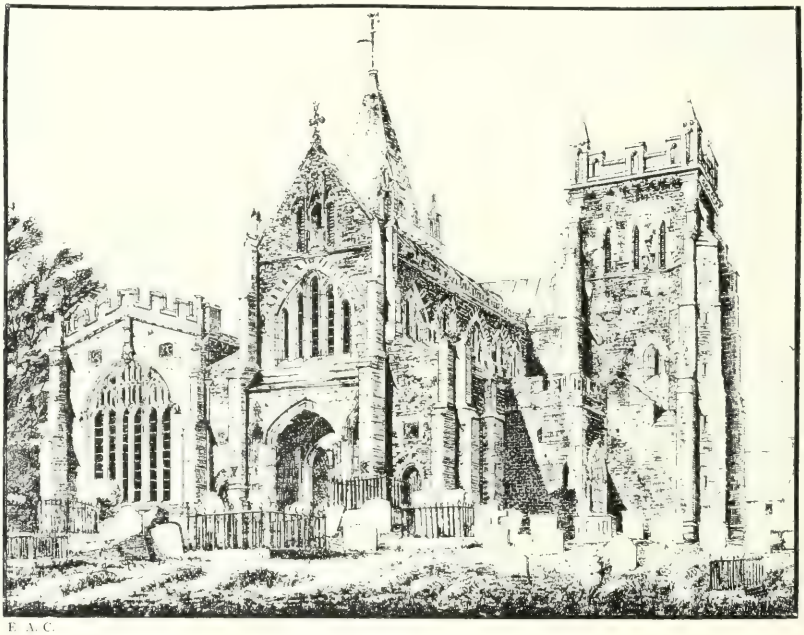
C. G. Beverley Minster from North-east

first all but one or two of the monks in this and the other orders were laymen; later it became common for the monks to take priests' orders; in the end it was practically universal. Many of our greatest churches were served by Benedictine monks.[2]

[1] On the beginnings of Monasticism see Abbot Butler in *Cambridge Mediæval History*, vol. i.

[2] For list of Monasteries arranged in counties see Cutts' *Dictionary of the Church of England*, 417. For a list and maps of all the English Religious Houses see Gasquet's *English Monastic Life*, 251-328.

Of these there are still in use, wholly or in part, the cathedrals of Canterbury, Durham, Ely, Norwich, Rochester, Winchester, Worcester, Chester, Gloucester, Peterborough, and St. Albans, as well as the important churches of Abergavenny priory, Bath abbey, Binham priory, Blyth priory, Boxgrove priory, Brecon priory, St. James, Bristol, Jesus College, Cambridge (the nunnery church of St. Radegund), Chepstow, Croyland abbey, Deeping St. James priory, Deerhurst, Elstow (nunnery), Ewenny priory, Lastingham, Leominster priory, London, St. Helen, Bishopsgate, and Nun Monkton, Yorkshire, both nuns' churches, Lynn St. Margaret, Malmesbury abbey, Malvern priory, Milton abbey, Monkton priory, Pershore

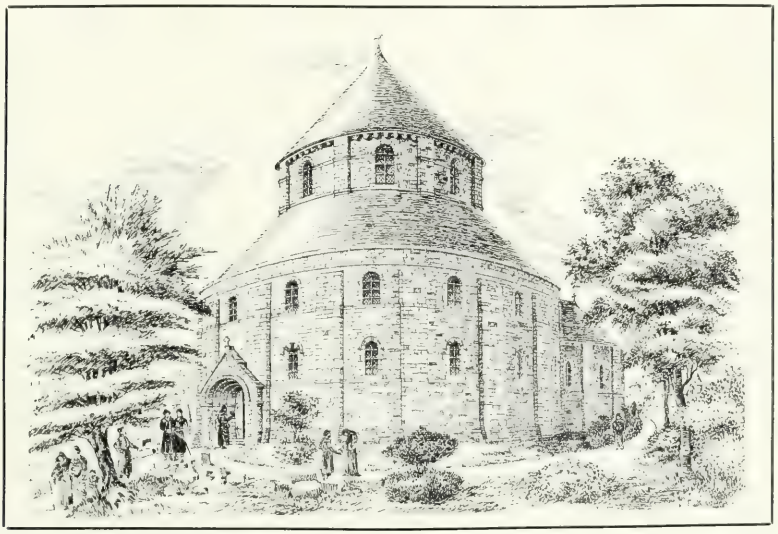


F. A. C.

Ottery St. Mary: West Front

abbey, Ramsey abbey, Romsey abbey (nuns' church), Selby abbey, Sherborne abbey, Shrewsbury abbey, Tewkesbury abbey, Thorney abbey, Tutbury priory, Westminster abbey, Wymondham abbey, Holy Trinity priory, York; in addition to minor houses, such as Bromfield, Salop, and Freiston, Lincolnshire. Considerable ruins of Benedictine houses or churches remain at Finchale, Durham, Lindisfarne and Tynemouth, Northumberland, St. Mary York, and Whitby, Yorkshire, St. Leonard, Stamford, Bury St. Edmund's, Evesham, Worcestershire, Battle, Sussex, St. Augustine, Canterbury, St. Martin, Dover, and Malling, Kent (nuns' church), and Glastonbury, Somerset.

In 912 a body of Reformed Benedictines was formed by St. Berno, called **Cluniacs** from their mother church at Cluny in Burgundy, of which only one arm of the eastern transept remains. The Benedictine monasteries were so many independent republics;[1] but the Cluniac and other establishments were all subject in one fashion or other to some supreme authority. Of the Cluniac houses in England Barnstaple was the first to be founded; then Lewes in 1077. At the Dissolution there were thirty-two Cluniac priories in England (Bermondsey alone was an abbey). No Cluniac church in England remains in use; but important ruins remain at Lewes, Sussex; Wenlock, Salop; Bromholm and Castle Acre,



T. G. Conjectural sketch of exterior of original church at Northampton

Norfolk; Monk Bretton, Yorkshire; and Thetford, Suffolk. The rest of the Cluniac churches have perished.[2]

In 1098 the monastery of Citeaux (Latin *Cistertium*) was founded in Burgundy as a protest against Cluniac ritualism and Benedictine learning. To the **Cistercians,** of whom the greatest name is that of St. Bernard, are due

[1] Except so far as they were subject to episcopal visitation. Among these of which records remain of visitations may be mentioned Monk Bretton, Yorkshire; Arthington priory (nuns), Yorkshire; Daventry priory, Northants; Delapré abbey (nuns), Northants; and Pontefract priory, Yorkshire.—A. H. T.

[2] Many of them were suppressed in the fourteenth century as "alien priories."

numerous churches in England, chiefly in the twelfth century; but as they were of set purpose built far from the tainted town in remote dales among the fells, or even in swamps,[1] none remain in use except Dore abbey (11),[2] the naves of Margam, Glamorgan, and Holm Cultram, Cumberland, and the nuns' church of Swine, East Yorkshire.[3] The parish church of St. Mary, Scarborough, was granted to the Cistercians in 1198, and must have been rebuilt soon after in the style of their Yorkshire abbeys. At Beaulieu in the New Forest the parish church is the refectory of the Cistercian monks; the pulpit in the wall is that from which some edifying book was read during meals.

H. E. I. Fountains: Chapel of Nine Altars

Among the more or less extensive ruins are Fountains (10), Kirkstall, Byland, Roche, Rievaulx (13), Sawley, Jervaulx, all in Yorkshire; Furness and Whalley, Lancashire; Croxden,

[1] "Our fathers," said St. Bernard, "searched out the damp and low-lying valleys wherein to build their monasteries; so that the monks, being often in ill health and having death before their eyes, should not lead a careless life." On the sites of Cistercian monasteries in Italy see Enlart's *Gothique en Italie.*

[2] The illustration shews the east end of the presbytery with three arches opening on to the procession aisle and eastern chapels (11); compare Salisbury (145).

[3] Swine church has lost nave, transepts, and central tower. From a plate in Poulsen's *Holderness* it would appear that the nuns' church was to the west; the present church is without a chancel arch and is the east limb of the original cruciform church.

Dore Chancel

Stafford; Hayles, Gloucester; Cleeve, Somerset; Ford, Devon; Valle Crucis, Denbigh; Strata Florida, Cardigan; Neath, Glamorgan; Whitland or Blanchland, Carmarthen; Tintern, Monmouth; Calder, Cumberland; Netley, Hampshire; Buildwas, Shropshire; Cwm Hir, Radnor; Basingwerk, Flint; Bindon, Dorset.

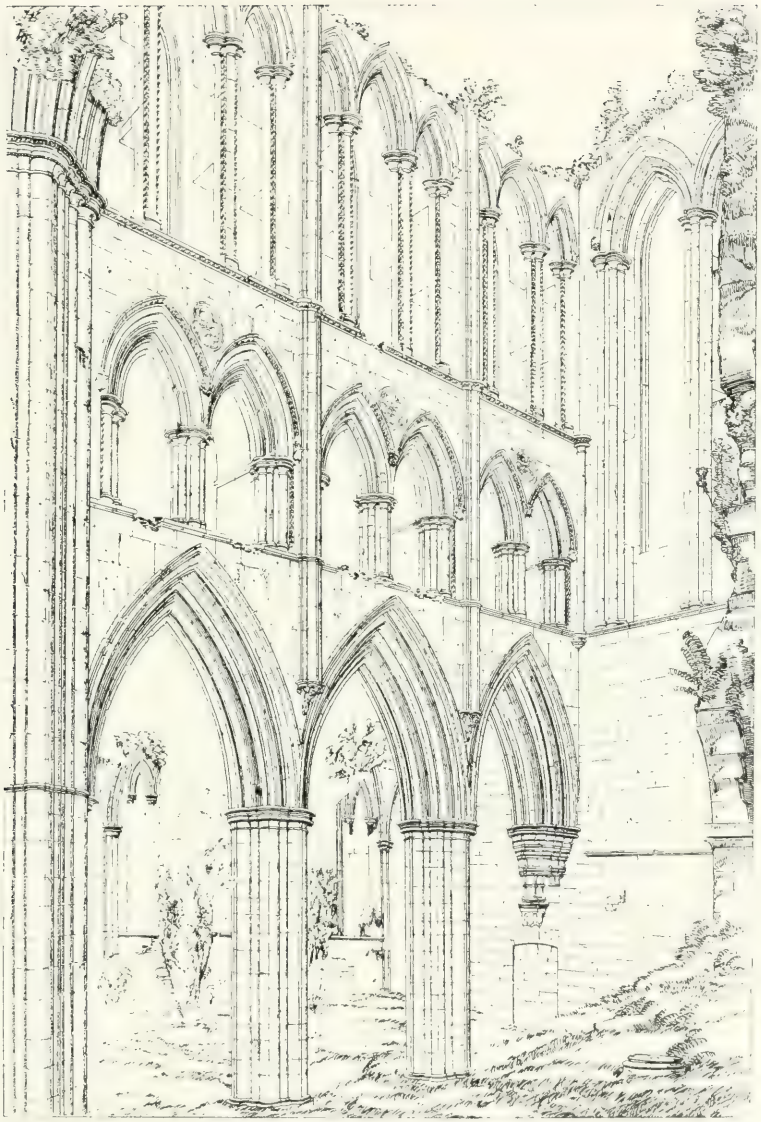
In 1086 St. Bruno founded the **Carthusian** order, the most rigorous and incorrupt of all the monastic orders. Of the English Charterhouses the most important ruins are those of Mount Grace Priory; the parish church at Witham, Somerset, may have been the church of the lay brethren.

There were but nine Charterhouses: Beauvale, Notts. (recently excavated); Coventry, Warwick; London; Hull and Mount Grace, Yorkshire; Witham, Hinton Charterhouse, and Charterhouse-on-Mendip, Somerset; Sheen, Surrey; and the Charterhouse in the Isle of Axholme, Lincolnshire.

In addition to the monks' churches, there were many served by canons, all of whom, unlike the monks, were in priests' orders: the canons lived in very much the same fashion as the monks a cœnobitic and cloistered life in a common refectory, a common dormitory, and a common cloister. In England there were three orders of Canons *Regular*, living in accordance with some fixed rule or code of life (*regula*). The most important were the **Austin or Black Canons,** whose rule of life was drawn in the main from the writings of St. Augustine. They differed from the monks in that the services in their churches were more open to the laity, and in that they might be allowed to take the services in parish churches belonging to their house;[1] in the churches of the Benedictine and Cluniac monks the laity appear to have had access only to services in the nave, and then only by favour; in the Cistercian and Carthusian churches no laymen were admitted, except the lay brethren or the paid servants of the monastery; indeed in the former, normally planted in remote solitudes, no strangers would be likely to appear; hence the Cistercian churches were comparatively short. Many important churches of the Austin Canons are still, wholly or in part, in use; *e.g.*, the cathedrals of Bristol, Carlisle, Oxford, and Southwark, and the priory churches of Bolton, Bourn, Bridlington, Brinkburn, Cartmel, Christchurch, Dorchester, Dunstable, Hexham, Lanercost, Porchester and Portsmouth, St. Bartholomew's, Smithfield, St. German's, Cornwall, Thurgarton, Waltham, Westacre, and Worksop.

Ruins of Augustinian houses and churches remain at Creake and Walsingham, Norfolk; St. Botolph, Colchester; Haughmond and Lilleshall, Salop; Llanthony, Monmouth; Guisborough and Kirkham, Yorkshire; Thornton, Lincolnshire; Burnham, Bucks., and Lacock, Wilts., both for canonesses; Maxtoke, Warwick; Newstead, Notts.

[1] Bishops demurred to granting such licences; see paper by Mr A. Hamilton Thompson on Bishop Gynewell's Registers in *Archæological Journal*, lxviii. 331, Note 2. It is to be noted that two Cistercian monks from Pipewell were rectors of Geddington, Northants; this is quite exceptional.



E. S.

Rievaulx: South Transept

Another order of Regular Canons was that of the **Premonstratensian or White Canons,** founded in 1119 at Prémontré, near Laon; these also followed the Augustinian Rule. Of their thirty-four churches in England all are in ruins or have disappeared, except the abbey church of Blanchland, Pembrokeshire, which is still in use.

The most important ruins are those of Bayham, near Tunbridge Wells; St. Agatha at Easby, and Eggleston, Yorkshire; Beeleigh, near Maldon, Essex; Halesowen, Worcester;

J. B. Hereford: Black Friars' Cross

Leiston, Suffolk; Repton, Derby; Woodspring, Somerset; Barlings and Tupholme, Lincolnshire; Coverham, Yorkshire; Dale, Derbyshire; and Torre, Devon.

The third order of Regular Canons is that of the **Gilbertines,** and is of English origin; it was founded by St. Gilbert of Sempringham between 1131 and 1148; in these houses the canonesses followed the Cistercian Rule, but the services in the churches were taken by the canons; of their twenty-six churches Old Malton survives in part.

Besides monks and Canons Regular there were friars, a kind of itinerant mendicant monks. Of these there were three important orders. One was the **Dominican or Black Friars**;[1] they had fifty-eight houses; their great church at Norwich survives, under the name of St. Andrew's Hall; in its nave is held the annual musical festival; in its chancel the corporation banquets. They arrived in England in 1221. There are important remains of the Dominican friary at Bristol. At Brecon the choir of the Black Friars' church is used as the chapel of Christ College, which was founded on the site of the old friary in 1541-2. The Guildhall at Chichester is part of the church of the **Franciscans or Grey Friars**; another ruined church remains at Winchelsea; they had seventy-five houses. They arrived in England in 1224. The Dutch church in the City of London is the nave of the church of the **Austin Friars**; they had forty-five houses; there are important remains of the Austin friary at Clare, Suffolk. Besides the above there were several smaller orders of friars, such as the Carmelites, with houses in England.

I. P. Chichester: Chancel of Grey Friars' Church

There were also military orders, such as the **Knights' Templars**; founded *c.* 1118 and suppressed in 1312; their original object was to protect the Temple at Jerusalem; hence their name; they had about eighteen "preceptories" in England. On their suppression very much of their property passed to the Hospitallers, who had great wealth at the Dissolution.

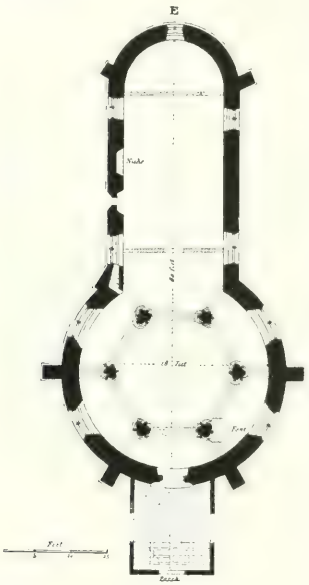
The **Knights' Hospitallers of St. John of Jerusalem** belonged to an order founded *c.* 1092; it arrived in England *c.* 1140; it was originally a sort of mediæval Cook's agency, providing safe conduct, directions, and means of conveyance for pilgrims to the Holy Land. When driven out of Palestine, the Knights retired, first to Rhodes, and finally to Malta, where their magnificent houses and churches may still be seen. In London their headquarters were at St. John, Clerkenwell.

Both orders, in remembrance of the ancient church of the Holy Sepulchre, usually built their churches round, as also sometimes those who did not belong

[1] On the Black Friars see paper by C. A. Buckley, in *Ecclesiology*, 294, collected from the *Gentleman's Magazine*; on the Grey Friars of Chichester see *Sussex Archæological Collections* for 1908; on the Northampton friaries, R. M. Serjeantson's *History of the Six Houses of Friars in Northampton*; Northampton, 1911.

to either order; to these round churches belong the Temple Church, London (Templars), Little Maplestead, Essex (Hospitallers) (16), St. Mary Magdalene, the garrison church of Ludlow castle, St. Sepulchre, Cambridge, St. Sepulchre, Northampton (9), and foundations known to exist at Thorrock church, Essex, Aislaby or Aslackby and Temple Bruer, Lincolnshire, and the old Temple in Holborn, London.

Finally, there was yet another very important and very ancient body of clergy, the **Secular Canons**: these may be subdivided into canons of cathedral churches and canons of collegiate churches. As to cathedral canons, their origin in some cases was quite a simple one. In the early days of the conversion of the Anglo-Saxons, a missioner and his priests would at first be itinerant throughout the whole district or kingdom, but later would settle down in some centre, and there would be built the little church and clergy house, as was done by St. Chad at Lichfield; the missioner and his priests developing into bishop and canons. In mediæval days the canons as a rule, in spite of various attempts to introduce semi-monastic discipline, abandoned the common life in the clergy house, each man living in a house of his own, but still under obligation to attendance at the cathedral services. As for the bishop, he became more and more engrossed with diocesan business and not infrequently with politics, and had perforce to intrust the management of the cathedral services and the care of the fabric to the canons and their dean, who however were themselves to a very large extent non-resident sinecurists and pluralists.[1] Among the churches so served are those which are styled cathedrals of the Old Foundation, which from pre-Conquest days to the present time have always been served by Secular Canons, viz., Chichester, Exeter, Hereford, Lichfield, Lincoln, London, Salisbury,



J. H. Little Maplestead

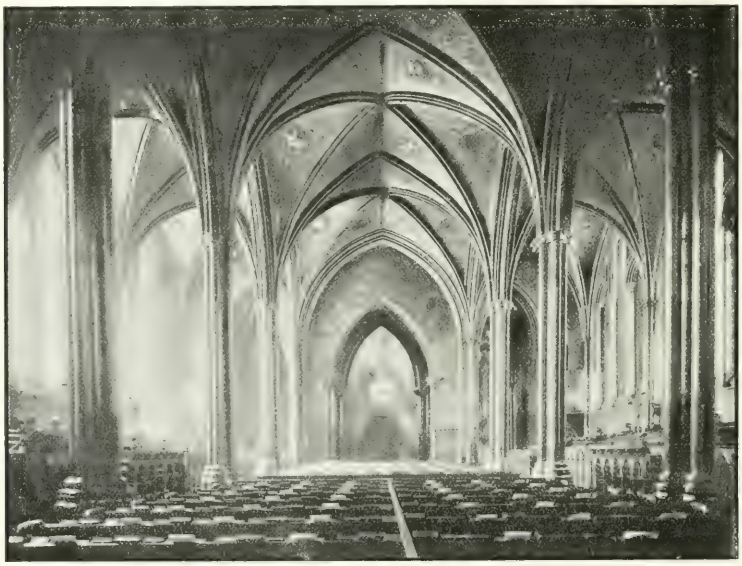
[1] From the twelfth century onwards, deans and canons became equally engrossed in political life with their bishops; and prebends in the larger churches became practically perquisites of clerks in the chancery and exchequer or in the households of bishops and great noblemen; *e.g.*, Walter Langton, Bishop of Lichfield, 1296-1321, held prebends simultaneously in nine collegiate churches and cathedrals before he became a bishop; he is merely one case out of many. The survival of the dean and canons as the bishop's consultative council is seen at York, where their consent was necessary to any transfer of the property of the see by the archbishop.—A. H. T.

Wells, York; as well as all the cathedrals of the Welsh dioceses, Bangor, Llandaff, St. Asaph, and St. David's. By Henry VIII. the Benedictine monks were dislodged from the cathedrals of Canterbury, Durham, Ely, Norwich, Rochester, Winchester, Worcester; and the Austin Canons from Carlisle; their places being filled with Secular Canons. Moreover Henry also converted three churches of Benedictine monks, Chester, Gloucester, and Peterborough, and two,

C. L. N. Temple Church: The Nave

Bristol and Oxford, of Austin Canons, into cathedrals, each with dean and chapter. In modern times, Manchester, Southwell, and Ripon, churches of Secular Canons, St. Saviour's, Southwark, a church of Austin Canons, and parish churches at Birmingham, Liverpool, Newcastle, Truro, and Wakefield have become cathedrals; of these Truro cathedral retains one aisle of the old parish church; at Liverpool an entirely new cathedral is in construction.

More or less identical, except that the church was not the seat of a bishop, was the system in what to some extent were pro-cathedrals, such as Ripon minster, Beverley minster (6), and Southwell minster, all originally in the diocese of York, and other great churches, in most cases of pre-Conquest date, such as Wimborne minster and St. Mary's, Leicester. Like the canons of the cathedrals each member of the college had an income of his own in the form of a prebend,



C. F. N. Temple Church : Chancel

and this led to much non-residence; sometimes indeed, *e.g.*, at Southwell, it was difficult to get a single canon to come and take the services in the minster.[1] The

[1] Ripon, Beverley, and Southwell, although extremely important churches, were all three very exceptional in their constitution, differing considerably from one another and from the normal collegiate church. Wimborne and St. Mary's, Leicester, on the other hand, had a normal constitution on the model of the ordinary secular cathedral. St. Mary's, Leicester, was much overshadowed in wealth and importance by the great collegiate church of the Annunciation in the Newarke, founded in the fourteenth century, which is often confounded with it. St. Mary's and St. Chad's, Shrewsbury; St. Peter's, Wolverhampton; St. Mary Magdalene, Bridgnorth; All Saints', Derby; St. Mary's, Stafford; St. Mary's in the Castle, Hastings; and Westbury-on-Trym, Gloucestershire, are some out of many churches of dean and canons, of which the constitution followed ordinary lines. Residence in most cases implied a dividend in the common fund in addition to the income of a prebend. Usually, however, a first year's residence had to

collegiate system of the later churches usually came about in rather a different way. If the work of a modern parish increases unduly, the rector or vicar provides himself with three or four curates, who, even when in priest's orders, are in a subordinate and inferior position, liable to dismissal on the advent of a

G. G. B. Fotheringhay, Northants

new incumbent. In mediæval days a more seemly method was usual. Where a town had grown up, *e.g.*, at Howden, or where it was desired, as at the Yorkshire village of Lowthorpe, instead of the scanty parochial services, to have as far as

be strictly kept before a share in the common fund was available. At Beverley, where the whole system was very peculiar, the canons holding the seven original stalls claimed their common share as the *corpus* of their prebends, irrespective of residence. The strict terms of residence in themselves made residence a very difficult matter.—A H. T.

W. M.

Greyfriars, Richmond

possible the round of services in use in a cathedral or a monastic church, it was not uncommon to make the parish church collegiate by adding to the parish priest other priests as colleagues, forming collectively a *collegium* or "college." In these colleges the provost or master or dean or warden and the chaplains lived in a common clergy house and had a common table and a common income. These foundations are rarely earlier than the fourteenth century; they closely resemble the older colleges, such as Beverley and Southwell, except that no members of the college were non-resident. Examples of the second class are Cotterstock, Northants, founded in 1337 for a provost and twelve chaplains; Fotheringhay, two miles away, founded in 1411 for a master, twelve chaplains, eight clerks, and thirteen choristers (19); and Battlefield, founded at first for a master and seven chaplains, to pray for the souls of those who fell at the battle of Shrewsbury in 1403.[1] In several cases the clergy house remains; at Maidstone it still goes by the name of the "College." This second class of collegiate foundation was exceedingly common from the time of Edward III. to the Reformation; Ottery St. Mary is a fine example (8, 28). The following is a list of some of the more important collegiate[2] churches still in use:—

Abergwili, Carmarthen (canons. The bishop of St. David's was nominally dean. The college was transferred by Henry VIII. to Christ College, Brecon).
Arundel, Sussex (chantry priests).
Astley, Warwick (chantry priests).
Attleborough, Norfolk (chantry priests).
Auckland St. Andrew, Durham (dean and canons).
Bablake, Warwick (*i.e.*, St. John Baptist, Coventry: chantry priests).
Battlefield, Salop (chantry priests).

[1] A. Hamilton Thompson's *Growth of the Parish Church*, 28.

[2] Collegiate churches are those in which the *governing body* is a college, whether of dean and canons, canons only, or chantry priests. The fact that the chantry priests of a church formed a college did not necessarily make the church a collegiate church. Thus at Clifton and Ruddington, Notts., colleges of chantry priests were incorporated, but the churches had their own parish priests, independent of the chantry college. Newark and Ludlow are prominent cases of churches in which the chantry priests, though not formally incorporated, formed a sodality within the church, and had their common house. The colleges of vicars choral and chantry priests at York are analogous: they were colleges of clergy in a large church, but they were not the governing body.—A. H. T.

Beverley, Yorkshire (canons, with a provost or financial officer who was usually a canon, but, as provost, was not a member of the chapter).
Bosham, Sussex (canons).
Brecon, Christ College (canons, founded by transference from Abergwili).
Bromyard, Hereford (canons or portioners, each holding a portion of the fruits of the church as his prebend).
Bunbury, Cheshire (chantry priests).
Burford, Salop, near Tenbury (portioners, as above).
Chester-le-Street, Durham (canons).
Chester St. John's, Cheshire (dean and canons).
Cobham, Kent (chantry priests).
Cotterstock, Northampton (chantry priests).
Crantock, Cornwall (canons).
Crediton, Devon (canons).
Darlington, Durham (canons).
Derby All Saints' (dean and canons: body of church rebuilt in eighteenth century).
Fotheringhay, Northants (chantry priests).
Gnosall, Stafford (canons).
Haccombe, Devon (chantry priests).
Hemingbrough, Yorks. (chantry priests).
Heytesbury, Wilts. (dean and canons).
Higham Ferrers, Northants (chantry priests).
Holyhead, Anglesea (canons).
Howden, Yorkshire (canons).
Irthlingborough, Northants (chantry priests. The warden and chaplains are sometimes called dean and canons).
Kirby Bellars, Leicester (a late thirteenth-century foundation of chantry priests, converted later into a priory of Austin canons).
Kirkoswald, Cumberland.
Knowle, Warwick (chantry priests).
Lanchester, Durham (canons).
Ledbury, Hereford (portioners).
Leicester St. Mary in the Castle (dean and canons).
Lingfield, Surrey.
Llanddewi Brefi, Cardigan (canons: the bishop of St. David's was dean).
Lowthorpe, Yorks. (chantry priests).
Maidstone All Saints', Kent (chantry priests).
Manchester cathedral (chantry priests).
Mettingham, Suffolk (chantry priests).
Newport, Salop (chantry priests: body of church much rebuilt).
Northill, Beds. (chantry priests).
Norton, Durham (canons).
Noseley, Leicester (chantry priests).
Ottery St. Mary, Devon (canons).
Penkridge, Stafford (dean and canons).
Pontesbury, Salop (portioners).
Ripon, Yorks. (canons).
Rushford, Norfolk (chantry priests).
St. Burian, Cornwall (dean and canons).
Salisbury St. Edmund (chantry priests).
Shottesbrooke, Berks.
Shrewsbury St. Chad (dean and canons; the church has been removed to a new site, but the crypt remains).
Shrewsbury St. Mary (dean and canons).
Sibthorpe, Notts. (chantry priests).
Southwell, Notts. (canons).
Stafford St. Mary (dean and canons).
Staindrop, Durham (canons).
Stoke by-Clare, Suffolk (chantry priests).
Stratford-on-Avon, Warwick (chantry priests).
Sudbury St. Gregory, Suffolk (chantry priests).
Sutton-on-Hull, Yorks. (chantry priests).
Tamworth, Stafford (dean and canons).
Tattershall, Lincolnshire (chantry priests)
Tettenhall, Stafford (dean and canons: deanery subsequently united to that of Wolverhampton).
Thompson, Norfolk (chantry priests).
Tiverton, Devon (canons or portioners).
Tong, Salop (chantry priests).
Warwick St. Mary (dean and canons).
Westminster St. Stephen's (dean and canons; crypt remaining).
Westbury-on-Trym, Gloucester (dean and canons).
Windsor St. George's (dean and canons).
Wimborne, Dorset (dean and canons).
Wingfield, Suffolk (chantry priests).
Wingham, Kent (canons).
Wolverhampton St. Peter, Stafford (dean and canons: deanery united to St. George's, Windsor, by Edward IV.).
Wye, Kent (chantry priests).

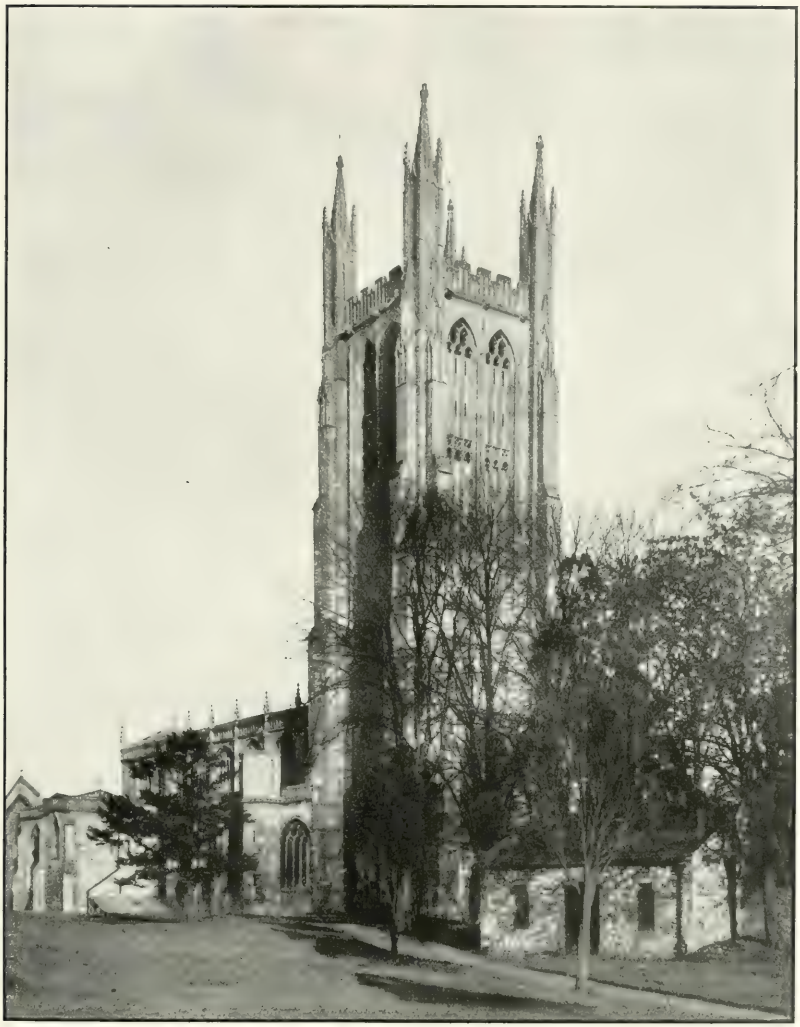
A few names might be added. The colleges of Eton and Winchester and the early colleges at Oxford and Cambridge stand on the same footing as the colleges of chantry priests, apart from their primary importance as establishments of teachers. Most of the colleges of canons were early foundations: some, *e.g.*, Darlington, Norton, Staindrop, Ledbury and Tiverton, were really churches of portioners. At Stoke-by-Clare, Wingham, and a few other places, the head of the college was a provost, who seems to have been a non-resident financial officer, but to have stood in a closer relation than the provost of Beverley to the church. The head of a college of chantry priests was usually called the master, while its members were *socii capellani*—chaplain-fellows. In some instances, as at Arundel and

F. S. Wells Cathedral from South-east

Fotheringhay, the foundation consisted of a master and twelve fellows, to represent Our Lord and His twelve Apostles.

In almost all cases the cure of souls of the parish was served by one of the college or by a vicar subordinate to the college. There are, however, exceptions. The parish vicar of St. Mary's, Leicester, was presented by the abbey of Leicester; and, after the foundation of the college of Higham Ferrers, the vicarage remained appropriated to Newarke college at Leicester. In both cases, however, it became customary for the impropriators to present one of the college to the vicarage or depute him to serve the cure.[1]

[1] Special acknowledgments are due to Mr A. Hamilton Thompson for notes on the Collegiate churches and for numerous additions to the listed examples.



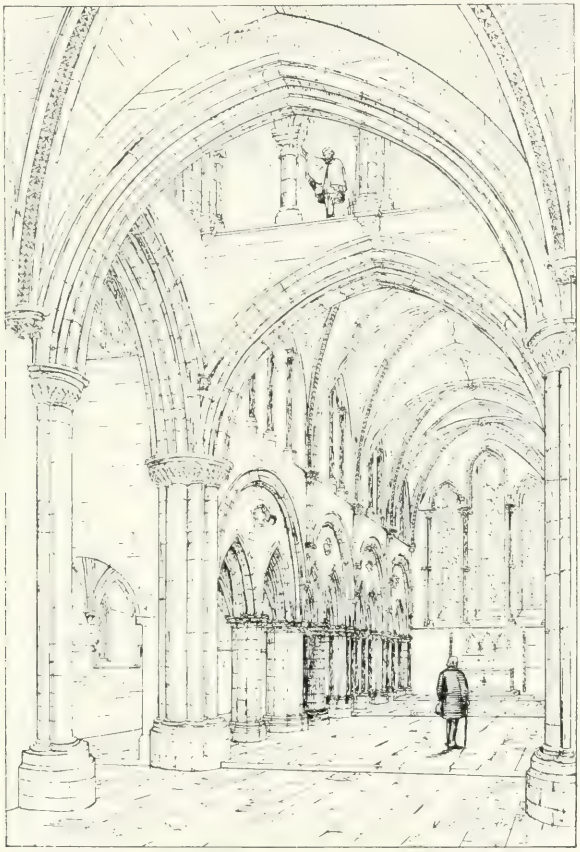
D. & P. St. Cuthbert, Wells

To the above classes of monks', canons', and collegiate churches belonged the largest and most important churches in England. Nevertheless by no means all of them were large. A Benedictine abbey like Reading might found a Benedictine priory at Leominster, and from that again might proceed Benedictine cells, each with a small church attached, *e.g.*, Little Malvern. Such small churches naturally conform in their architectural dispositions to those of the parish churches in general, and for architectural purposes may be studied with the latter. Setting these apart, there is left a large group of the most important churches in England, churches of monks, canons, and friars. As so few of the friars' churches are now in use, we may neglect them, and speak of the *Greater Churches* as the *Churches of Monks and Canons, Regular or Secular*, which, of course, includes cathedrals; for convenience' sake we may abbreviate the designation to *Greater Churches*. Thus in studying English ecclesiastical architecture we have to deal with two main classes: the *Greater Churches*, excluding large parish churches; and *Parish Churches*, including minor examples of churches of monks and canons.

The majority of the churches of monks and canons were of great size. Such a church as Old St. Paul's or Glastonbury would be considered vast even now; but they were built when the population of England was quite small. The Benedictine church of Glastonbury was nearly 600 ft. long; the cathedral church of Old St. Paul's was about 596 ft. long (3). It might be accepted that a very large church was required for London; but what is to be said of a church like Glastonbury, situated in the middle of the swamps of Somerset? And within sight of Glastonbury is a cathedral in the tiny city of Wells (22). Moreover Wells possessed, in addition, the large parish church of St. Cuthbert (23), and Glastonbury two parish churches, St. John and St. Benedict. The inference is that whatever the purpose of the abbey church and cathedral at Glastonbury and Wells, they can have been but to a slight extent, if at all, designed for congregational use. For congregational worship parish churches were designed, not the great abbey church or the cathedral. These parish churches indeed at Glastonbury and Wells were built to keep lay people out of the monastic church. So also at Bury St. Edmund's the Benedictines built the churches of St. Mary and St. James—two of the most magnificent parish churches in England, and at Coventry the two great churches of St. Michael and Holy Trinity—so that they might not be disturbed in the abbey church by services of lay worshippers.[1] Similar is the case of the parish church of St. Margaret, flanking Westminster abbey; many other examples

[1] In Rochester cathedral it was settled in 1312 that no parish mass should be *sung* in the nave except on Sundays and certain festivals; on other days it was said, not sung. The other offices were always to be said, not sung. Hope's *Rochester*, 79.

might be adduced.[1] The requirements indeed of the Regulars on the one hand



I. W. R. Boxgrove Priory: Chancel and Transept

and lay-folk on the other were largely divergent and sometimes conflicting. The seven daily offices of the monks and canons can seldom have been fully observed

[1] The *capellæ extra portas*, of which remains exist, or in some cases the entire fabrics, *e.g.*, at Merevale, Warwick, Kirkstead, Lincoln; Barnwell, Cambridge; and Little Coggeshall, Essex, are instances of small churches built for the use of lay-folk living in the neighbourhood of religious houses.—A. H. T.

in the lay-folks' church.[1] To each of these, as to other services, the monks or canons were summoned by special bells; the laity also had bells to be rung, but they wanted them rung at a different time; they did not want to have a bell rung for matins at one o'clock in the morning; at that time the laity were snug in bed; they wanted bells ringing when they were baptized and when they were married, when the soul was passing from the body and at funerals and obits; bells rang to remind them to say their prayers when they went to bed and in the morning when they got up; bells woke them up at dawn for harvesting and other bells gave the signal when gleaning might begin; the curfew reminded them to put out their fires and set lost wayfarers on the way to town; there was no end to the bell-ringing in the parish church, and it would have been highly annoying if the laity had been allowed to use the bells of the monks or canons. At Wymondham abbey (Benedictine) they seem to have done so, but this led to such quarrels that at last the townsfolk built the present great west tower and put in it bells for themselves. At Leominster, also Benedictine, the western tower seems to have been the monastic belfry, and the parishioners were only allowed a diminutive bell-cote at the west end of the parochial aisles. The best way out of the difficulty was to get rid of the laity by building or allowing them to build a church of their own; sometimes, like the two Bury churches, very large indeed, yet insignificant in scale compared with the enormous abbey church hard by. But the parish church had by far the largest congregation. In fact, strictly speaking, the great monastic or collegiate church had no congregation at all; it might occupy, like Lincoln minster, a couple of acres, or, like Old St. Paul's, over three acres; but the number of worshippers in those vast spaces would usually not much exceed a hundred. So we are confronted with what seems to modern ideas a strange anomaly, that for large congregations the smaller churches were built, and for small congregations the larger. With some exceptions, to be noted later, the Greater churches were not primarily intended to be used by laymen, but only by the permanent choir of monks or canons. The strength of this choir varied greatly. In the Benedictine church of Peterborough there were 110 monks in 1240, but only 64 in 1440. In the Cistercian abbey church of Waverley in 1187 there were 70 monks and 120 *fratres conversi* or lay brothers. In the Benedictine

[1] The impression which one gains from original documents is that these offices were nevertheless expected to be said in parish churches as well as in the larger churches. Ordinances for chantries generally prescribe, as one of the first duties of the chantry priest, that he shall be present in choir daily, or if not, on Sundays and double feasts, to take his part in the canonical hours with the parson of the place. This was the case in quite small places as well as in large or well-staffed churches. The chantry priest was also bound to say the office of the dead, *i.e.*, Placebo, Dirige, and the Commendation of Souls, daily as part of his duty. Archbishop Thoresby had to call the chantry priests of St. Mary's, Nottingham, to order, because, instead of attending the daily offices in choir, they went out for country walks, and excused themselves by saying that they said their offices to themselves.—A. H. T.

church of Westminster in 1339 there were 49 monks; in 1347 52; in 1392 about 47; in 1508 and 1532 there were 45. In 1414 the number of monks in the Benedictine church of Boxgrove had fallen to 9 (25). Even if we add to the monks a fair number of novices, such a congregation must have been lost in the vast solitudes of such a church as St. Albans (27). Nor would the occupants of

C. L. N. St. Albans Nave

a cathedral or collegiate church of the first rank be much more numerous; for though their numbers would be swollen by the presence of the deputies of canons —the minor canons or vicars choral—and chantry priests, yet on the other hand they would be depleted by the fact that the great majority of the canons were normally absentees, usually residing in the country parishes where their prebendal churches and estates lay. We may take it as very improbable that the normal

number of the congregation of the Greater churches of monks or canons would exceed sixty, even if it reached that number. This then is the first thing to be

F. F. D. Ottery St. Mary from South east

borne in mind in beginning the study of the Greater churches—that they were designed for quite other purposes than a modern church; and that if we are to understand them, we must find out what those purposes were.

CHAPTER II

REQUIREMENTS OF A GREAT MEDIÆVAL CHURCH

WHEN an architect is asked to design a building, the first thing he needs to know is the purpose for which the building is intended; whether it is to be a school or a hospital, a polytechnic or a town hall, a museum, a warehouse, or a dwelling-house. If it be the last, he will want to know how many bedrooms, how many reception rooms, and so on he is to provide. In like fashion, in commencing the study of ecclesiastical architecture, it would seem to be necessary first to ask what is the purpose which churches were meant to serve; whether there was more than one purpose; whether the requirements of churches were the same, or whether they varied; and, incidentally, whether the purposes for which modern churches are built are the same as those for which the old churches were built, or the reverse. In other words, since we must begin with planning, and since planning is the expression of purpose, there needs first to be set forth the requirements, not of one typical church, but of the various classes of church which were in use in mediæval days. That is the object of the present chapter.

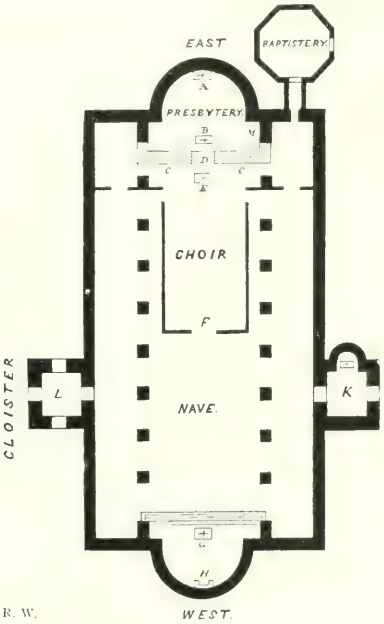
THE SANCTUARY OR PRESBYTERY

For the first sixteen centuries of Christianity the central act of worship was the Divine Sacrifice at the High altar. Where the High altar was, there was the Holy of Holies; on the south side were the sedilia and piscina, on the north side, the Easter Sepulchre. This most important part of the church is the sanctuary or presbytery.[1]

The High altar stood in the easternmost bay of the private chapel of the monks or canons. It was not placed against an eastern wall, as in a parish church, but stood free; in order that whenever the rehallowing of the altars took place, the priest might be able to pass round, aspersing it from every side in accordance with

[1] The part of the church in which the High altar stood is usually styled the *presbytery*, a name, however, which properly belongs to the sedilia, *i.e.*, the seats occupied by the celebrant, deacon, and subdeacon during certain parts of the Mass. Sometimes it is called the *sacrarium*; sometimes the *sanctuary*. The term *sacrarium*, strictly speaking, applies to the sink of a piscina.

the rubric. Even when in later days a great stone reredos was added to the back of the altar at Christchurch, Winchester, St. Albans, Milton abbey, Peterborough, Westminster, Southwark cathedral, doorways were inserted right and left of the altar, so that the priest in aspersing might still pass round. At least one bay was kept free in front of the High altar, as a considerable amount of space was needed at High Mass for the celebrant and his servers, the gospeller, the epistoler, the cross bearer, the taperer, and the censers. For the sanctuary, therefore, a minimum length of two bays was desirable; this was the length of the sanctuary at St. Stephen's, Caen; St. Georges de Boscherville (31), Normandy; Lincoln minster and Selby abbey.

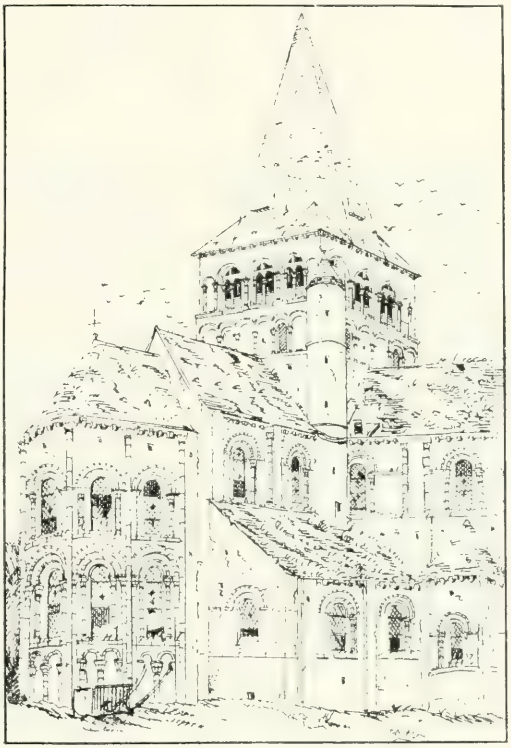


Canterbury: the Anglo-Saxon Cathedral

It was customary, however, to place an additional altar near the east end of the choir; it is spoken of by various names, *altare in choro, parvum altare in choro, minus altare, medium altare, altare matutinale; i.e.*, it was a small altar used by the monks or canons in choir, standing midway between the stalls and the High altar, and it is this altar which was employed at the office of Matins and at certain other times. This altar is clearly shewn in the ninth-century plan of St. Gall, where it occupies the centre of the western half of the chancel. In the Anglo-Saxon cathedral of Canterbury, *c.* 950, the matutinal altar stood a little to the west of the High altar and at a lower level (30). At Westminster[1] it must have stood in the crossing under the low central tower; for Henry VII. directed daily mass and divine service shall be said by "the chaunt'y monks at the Aultier under the lantern place betwene the Quere and the high aultier"; the tall plinths of the piers of the crossing shew that it was originally at a higher level than the ritual choir but at a lower than the sanctuary. Moreover an intermediate bay was desirable between the choir (where the stalls were) and the sanctuary or sanctuaries, in which might be placed a doorway on either side (the *ostia presbyterii*) by which the monks usually entered and left their choir. The result was that the sanctuary had to be lengthened considerably. The sanctuaries of Lanfranc's

[1] See the writer's *Westminster Abbey*, 48 and 38.

Canterbury (117) and of Remigius' Lincoln cathedral had been but two bays long;[1] but St. Albans (123) and several others were set out with sanctuaries of four bays; this indeed was the normal length of the English sanctuary *c.* 1100 in the English churches. In a church, therefore, of the first rank a sanctuary of at least four bays was planned; an eastern bay for the High altar on its broad platform, a second bay for the servers, a third for the matins altar, a fourth for the *ostia presbyterii*. In Canterbury chancel the abnormal length of six bays was reached in the sanctuary of Priors Ernulph and Conrad (1096-1130); of the Gothic churches Worcester (133) built a sanctuary of five bays in the thirteenth century.



J. B. W. St. Georges de Boscherville from North-east

It should be added that the sanctuary was usually delimited from the choir by a change of level, normally of one step, the *gradus presbyterii*; in St. David's cathedral it is also fenced off by an open wooden screen.[2] So also the choir was usually raised one step above the nave,[3] unless there was a crypt beneath it, when the elevation might be considerable, *e.g.*, in Canterbury cathedral. The altar

[1] Excluding the apse.

[2] Illustrated in *Gothic Architecture in England*, 162; but this screen seems not to be *in situ*. There are, however, a few parish churches which have presbytery screens; see the writer's *Screens and Galleries*, 17.

[3] Thus at Tewkesbury the area of the old choir is marked by a step across the nave. In parish churches also it was usual for the chancel to be one step higher than the nave; unless the chancel was built on a steep hillside, as in St. Mary's, Guildford, or above a crypt, as in Hythe church, Kent, in which case there might be several steps. Sometimes, however, a parochial chancel is on the same level as the nave; or even one step lower, as at Warlingham, Surrey; St. Michael's, Cambridge; and Studland, Dorset.

stood on a platform of one or two broad steps above the sanctuary. Placed on the top of a high flight of steps it would have been much more imposing, but would have been very inconvenient for the celebrant and his servers in their frequent passages to and from the altar.

THE CHOIR

The early Christian basilica consisted normally of but two parts; a very spacious aisled nave, and a small apse; the former destined for the laity, the latter for the clergy. As time went on, the great majority of the larger churches built for the laity still retained the basilican proportions, a spacious aisled nave and a comparatively small chancel. But when churches came to be built not primarily for the laity at all, but for the clergy, the little apse was utterly insufficient. It had to be extended and enlarged again and again; especially after the sixth century, when St. Benedict founded the first regular order of monks, and required monks' churches. So that the history of the planning of the Greater churches is one of stagnation as regards the planning of the nave; even their largest naves were not so long or so spacious as some of those of the fourth century at Rome (the nave of Old St. Peter's was 300 ft. long); on the other hand the little chancel expanded to north and south and east and west in the most amazing fashion, till the eastern limb of the church equalled or even surpassed the western in length and area, as at Old St. Paul's (3), York minster, Worcester (133), and Wells (131). As regards the Greater churches then there is little to tell as to the history of the western limb; but the history of the eastern limb is complicated in the highest degree.

F. E. Torcello: Bishop's Throne

When great churches began to be built for manifold services to be rendered by a permanent choir, the first thing to be done was to convert the bipartite plan of the basilica into a tripartite one. The crowding up in one small apse of the bishop and his clergy and the High altar, celebrant and servers at Mass was intolerable, and indeed impossible, when the choir came to consist of fifty or sixty monks. They had to leave the apse, and to be given seats elsewhere, in other words they had to be provided with a choir; thus the plan became tripartite; viz., sanctuary, choir, and nave. Of the primitive arrangement, in which the

clergy sat round the apse, the bishop's chair being placed against the centre of the east wall, several examples survive. In Dalmatia and Istria bishops' thrones remain in their original position at Parenzo, Aquileia, Grado, Lard, Trau, Ossero; also at Torcello (32), S. Stefano, Bologna, and Vaison cathedral, Provence. In Norwich cathedral in the centre of the apsidal wall of the sanctuary there are the fragments of the original stone seat of the bishop.[1] In the second phase of the story the throne and stalls have been removed from the apse and are placed in the eastern

A. P. Rome: S. Clemente

bays of the nave; they are separated off by low marble walls, perforated with patterns often of very great beauty. Many of these low marble screen-walls remain; *e.g.*, at S. Clemente, Rome (33), and S. Maria in Cosmedin, Rome; the chancel of the Canterbury cathedral of 1096-1115 used to be screened by "a wall of marble slabs," according to the chronicler, Gervase. In the second period, then, the clergy occupied stalls in the eastern bays of the nave, but within sight and hearing of the faithful; so that the church services were still to a large extent

[1] On "Bishops' Thrones" see the writer's *Stalls and Tabernacle Work*, 103.

congregational. This change had been made in some cases at any rate as early as the second half of the fifth century; that was the time when the apse of St. Martin, Tours, was converted into a Saint's chapel, when the clergy would have to be found seats elsewhere. Then comes the third period—in mediæval days. The stalls of the clergy still occupy a similar position, but they are placed in a choir intercalated between the nave and the presbytery, and are screened off from the nave. This prolongation of the apse westward appears in the ninth-century plan of St. Gall. Such a plan produces a chancel, with presbytery to the east and choir to the west. How early the offices and Mass were secluded from the laity it is difficult to say; probably very early. At any rate in Westminster abbey there were tall canopied stalls as early as 1260;[1] and stalls without canopies undoubtedly existed in the twelfth century and no doubt much earlier. The exact position of the stalls varied. At Worcester (133) the stalls were placed under the crossing and in the eastern bay of the nave; where the chancel was short, as at Westminster and the Cistercian churches (161), they were placed in the nave[2] (125). The fourth and final stage was reached in Canterbury cathedral, as remodelled between 1096 and 1130. Lanfranc's cathedral, 1070-1077, copied in almost every dimension from St. Stephen's, Caen, of which Lanfranc had been abbot, was utterly inadequate as cathedral of a diocese and chapel of a large monastery. It could not be extended westward without pulling down the western towers; moreover the chancel was raised high on a crypt, and from stalls in the nave below the necessary view of the celebrant during the office of the Mass must have been very limited. Therefore to get the stalls more on a level with the High altar, they were placed within the chancel (117). This was a tremendous innovation, and completely turned the direction of the planning of the English Greater churches. The chancel of Lanfranc's cathedral had an apsidal chancel of but two bays; but that of Priors Ernulph and Conrad had no less than nine bays plus an apse. Cathedral churches, monastic churches, canons' churches hastened to follow the lead of Canterbury, till in Gothic days there were few of the Greater churches which had not transferred their stalls to the chancel, except old-fashioned convents such as those of Worcester, Ely, Peterborough, Norwich, and Gloucester, and that of Westminster, where, however, the plan is of French inspiration; to which is to be added Chichester (secular canons). This then—the removal of the stalls of the ritual choir to the chancel—is one of the primary causes of the enormous length reached by some of the later churches; *e.g.*, Ely, Winchester, and Old St. Paul's, where the eastern limb was some 260 ft. long.

In all mediæval churches of monks or canons, the clergy and singers were

[1] See illustration in the writer's *Stalls and Tabernacle Work*, p. 31.

[2] See the writer's *Screens and Galleries*, 157-164.

F. S. Winchester Cathedral Choir

seated in a choir[1] west of the sanctuary. In the Greater churches, on either side of the choir, there were two or three rows of stalls, those at the back being raised above those in front; there were also return stalls to the west, on either side of the principal doorway by which the choir was entered from the nave. From the thirteenth century onwards the stalls were provided with canopies, often of tabernacle work, of constantly increasing splendour.[2] If there were but two rows of stalls on each side, the choir might be narrow; *e.g.*, that of Beverley minster is only about 28 ft. wide; but with three rows on each side, as at Lincoln, the choir became very wide; there it has a span of about 42 ft. The width of the choir, as a rule, settled the width of the other limbs of the church; the sanctuary and nave naturally tended to be of the same width as the choir; and the central transept was usually made of the same width as the choir and nave, in order that the crossing and any central tower above it might be square and not oblong. The number of stalls varied according to the scale and income of the church.[3] They vary from 108 in Lincoln minster[4] and 98 in St. George's, Windsor, to from 60 to 68 in Beverley minster, Winchester cathedral, Henry the Seventh's chapel at Westminster, Wells cathedral, Norwich cathedral, and New College, Oxford, Gloucester and Hereford cathedrals; in the rest of the Greater churches smaller sets are left; in some they have disappeared altogether; when the set is complete, it tells us the maximum number of monks and novices to be found in a monastic church, or of canons and their deputies in a church of Regular or Secular canons. As a rule three bays were appropriated for the stalls, or one bay of the nave plus the *crossing* (the space underneath the central tower, where the four arms of the church cross).

[1] The term "choir" is unfortunately ambiguous. Architecturally it is often applied to the whole eastern limb; in which case it includes at Rochester both choir proper and sanctuary; while at Lincoln it includes choir, sanctuary, saint's chapel, procession path, and eastern chapels. Ritualistically, the term is applicable only to that part of the church in which were the stalls of the clergy and singers; and as they sometimes were placed in the western limb of the church, *e.g.*, at Westminster and St. Albans, and in the Spanish cathedrals, the ritual choir in that case is in the architectural nave. In this volume the term "choir" will be strictly confined to the ritual choir wherever the stalls happen to be placed; and the whole of the eastern limb of the church will be styled "*chancel*," just as it is in a parish church; the extension of the term to the Greater churches enabling one to describe the parts of a church with greater precision. Behind the presbytery or sanctuary there comes to the east a group of members, as at Lincoln, which it has become customary to style collectively the "retro-choir"; this term it is proposed to retain, and not to employ the term "retro-sanctuary," which would be more accurate.

[2] See the writer's *Stalls and Tabernacle Work in English Churches*, Frowde, 1910.

[3] In the writer's *Misericords in English Churches*, p. 224, the chief sets of stalls remaining are enumerated; and on pp. 226 and 227 the date of each set is given.

[4] The term *monasterium* or *minster* was used loosely both of collegiate and parish churches even before the Norman Conquest: *e.g.*, it is applied to Totnes church, Devon; Sutton church, Berkshire, and apparently to the secular collegiate church at Exeter before the Norman Conquest. See Rev. Oswald J. Reichel in *Transactions of the Devonshire Association*, xxxix. 363.

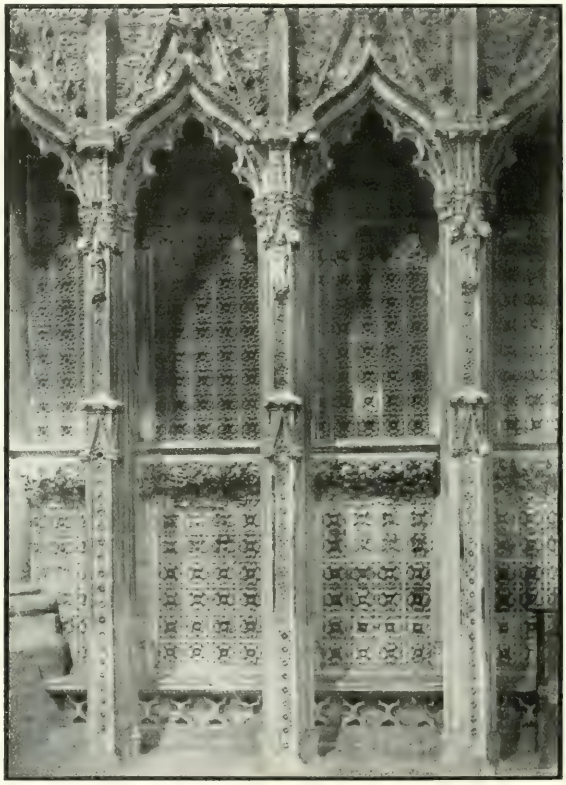
In many of the Greater churches the original planning has been upset in recent ignorant and unnecessary "restorations"; *e.g.*, at Hereford the stalls used to be under the central tower; now they are jammed into the short presbytery. So also in Worcester cathedral and elsewhere the stalls have been moved into the chancel, destroying the noble effect of the originally spacious presbytery. The reason alleged for the alterations was that the cathedral was made better fitted for congregational worship. The very reverse is the case: in a church in which the stalls have been placed in the chancel, whether recently or of old, services in it can only be thrown open to a large congregation by narrowing gangways and crowding chairs and

H. F. F. St. Albans: Rood Screen

benches into the sanctuary—a practice as irreverent as it is ruinous of architectural effect: even when this is done, there is room for only a limited congregation. In such a church, if it is desired to have services for large congregations, the remedy is to erect a second altar and stalls in the crossing; thus the church becomes two churches; the eastern church in the chancel for the private daily services of the dean and chapter, attended by but a handful of laity; and the western church, composed of the crossing, transepts, and nave for the greater congregational services. Where, however, the stalls were in the crossing, as at Worcester, Hereford, and Ely, they would have served equally well for either service, unless, as at Gloucester, there was a screen to the west.

LAY USE OF THE NAVE

The term "*nave*" is a very ambiguous one; it is used in three senses. Architecturally it may mean the western limb of a church, including the aisles; but it is also



S. S. Lincoln: Choir Screen

used of the western limb, excluding the aisles; in this second sense we might speak of the nave of a chancel or of a transept; it is best when employing the term in this second sense not to speak of the "nave," but of the "*central aisle*." Again, ritualistically, the term "nave" strictly applies only to that part of the western limb of the church which is west of the Rood screen in such churches as possessed two great

Lincoln Nave

screens. Thus in the collegiate church of Ottery St. Mary the western or Rood screen was placed across the western arch of the crossing; here therefore the ritual nave was conterminous with the architectural nave. But in most of the greater monastic churches the Rood screen was placed some distance down the nave; *e.g.*, at St. Albans, where of the long architectural nave only the western bays constitute the ritual nave. The cathedrals and collegiate churches, however, very rarely had two screens; they had one screen which at once served as Rood screen, closed in the choir from the west, and provided a backing for the return stalls; in such a church, *e.g.*, Lincoln minster, the ritual nave extended eastward up to the Choir screen and included the whole of the architectural nave plus the crossing. Where none of the architectural nave was occupied by stalls, the ritual nave might be of very great

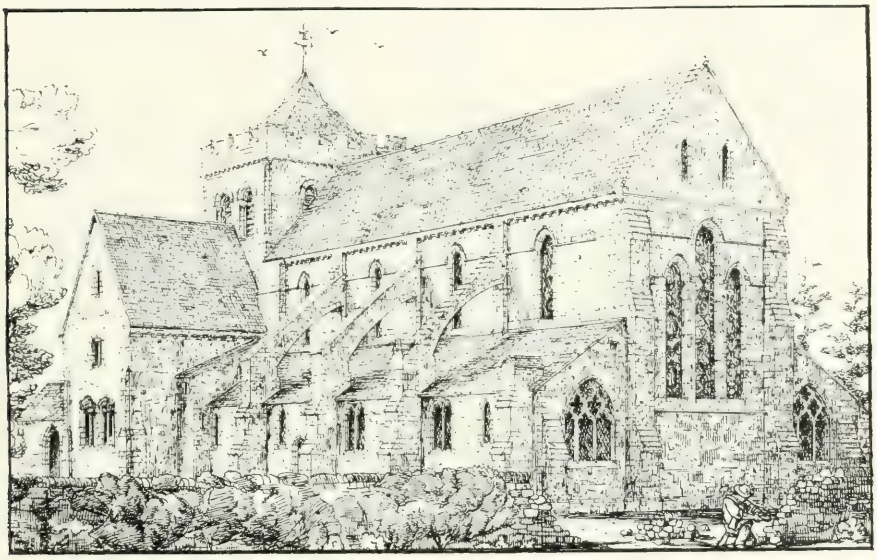
H. F. M. Christchurch: Choir Screen

length; in the cathedral of Old St. Paul's, London, it seems to have contained twelve bays plus the crossing (3); in St. Albans and Norwich cathedrals, where, as at Westminster, the stalls were placed in the nave, there were ten bays west of the Rood screen (123).

In any case a very considerable area of a Greater church was separated off from the rest to the westward, and the question arises—What was it used for? It is not easy to say. Usage varied in the different orders of monks and canons; and even among the cathedrals of the old foundation the usage was not uniform; some followed the Use of Sarum, some that of York, some that of Hereford.[1] Each of the Greater churches had a book, its Customary, which catalogued its own special uses as well as those in which it did not diverge

[1] See *Book of Common Prayer*; preface concerning the Service of the Church, paragraph 5.

from general rule. Sometimes the resemblances of ritual and discipline were very close; *e.g.*, the Customary or *Consuetudo* of St. Augustine, Canterbury closely resembles that of Westminster abbey[1] (both were Benedictine); in other cases the divergences are considerable. The first thing to inquire is—What use did the monks and canons themselves make of the ritual nave? In the first place there were several altars in it. In St. Albans abbey there still remain on the west face of six piers of the north aisle a number of painted reredoses, each arguing the former presence of an altar beneath; we may infer that there was



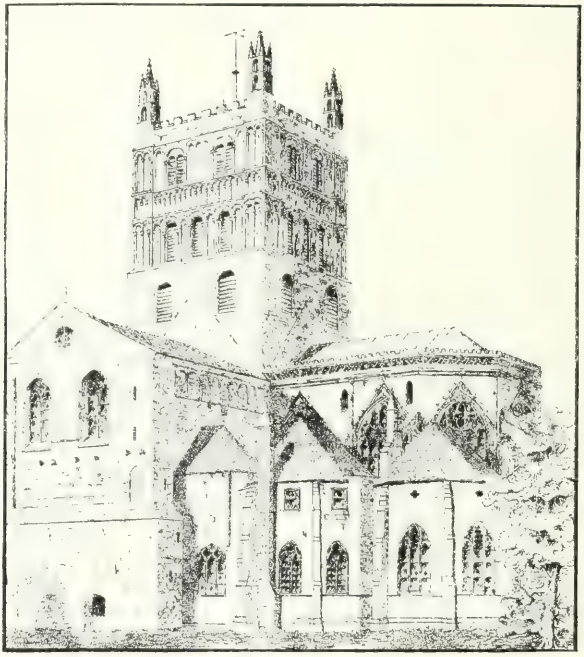
L. W. R. Boxgrove Priory Church from South-east

an equal number of altars on the other side of the nave (27). At Ebrach, a Cistercian abbey, there were altars against the western face of the piers of the nave, four on each side; at Citeaux in Burgundy also the church had altars against all the piers of the nave. The *Rites of Durham* shew that there were in the nave of the cathedral (1) the Jesus altar against the western side of the Rood screen; (2) the altar of the Saviour; (3) that of Our Lady of Pity; (4) that of the Bound Rood; (5) the altar in the Nevile chapel. The conclusion is that one use of the ritual nave was to provide room for altars for which there was not

[1] Edited by Sir E. M. Thompson for the Henry Bradshaw Society in 1904.

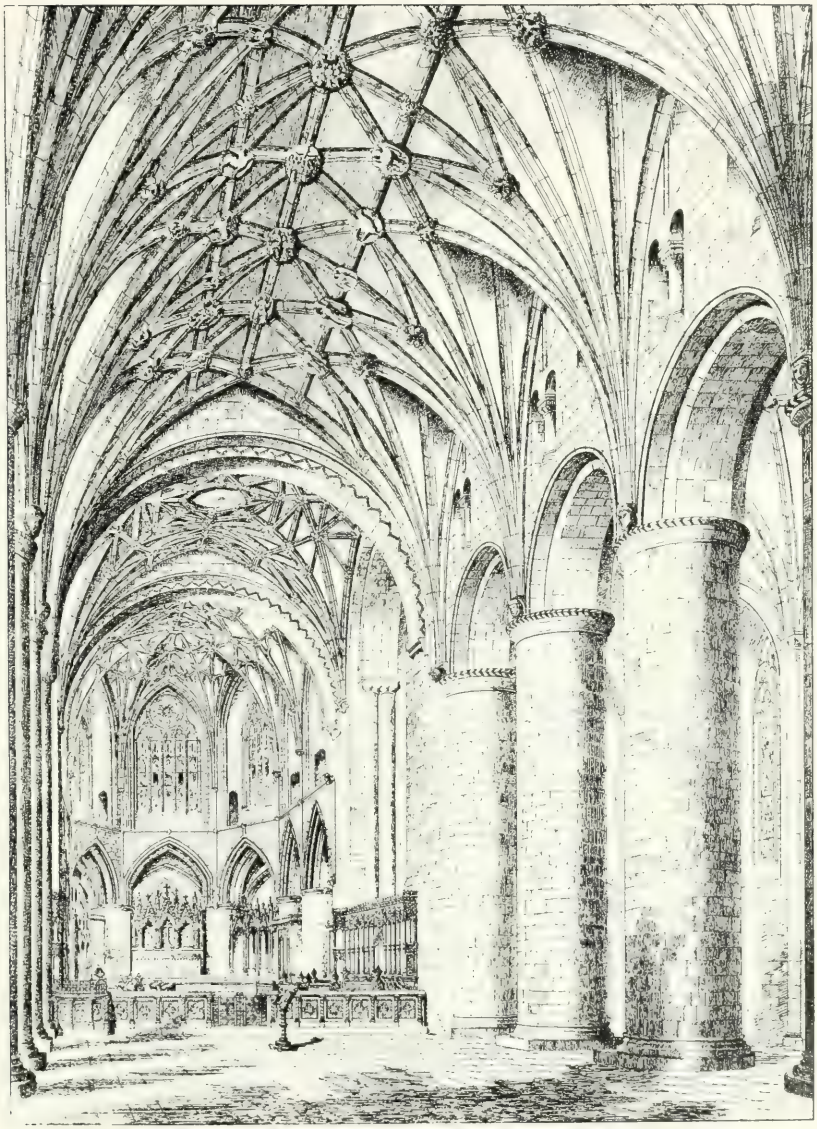
space elsewhere. Secondly, it is known that an important part of the ceremonies of the great processions, as will be pointed out later, took place in the nave both in monastic and cathedral churches.

Thus much may be said of the use of the ritual nave by the monks and canons themselves. It is hardly likely, however, that at Westminster a ritual nave was built of six bays, at Norwich of ten bays, at Old St. Paul's of twelve bays, for these



A. J. S. Tewkesbury Abbey from South-east

minor purposes only. It is to be inferred that these western bays were built in a greater or less degree for the use of the laity also; to put it otherwise, they not only were used by the monks or canons, but were in addition parochial to a greater or less extent. That this was so may be concluded from the fact that at the dissolution of the greater monasteries in 1539 the parishioners asserted a vested right in the nave of many of the Greater churches, and succeeded in retaining it as their parish church; to the eastern parts of the church they had no claim.



G. G. S. Tewkesbury

This explains why the majority of the Greater churches, other than cathedrals, which have remained in use, consist only of a nave; the chancel, and often the transepts, having been sold off by the grantees; examples are Binham, Blyth, Bolton, Bridlington, Crowland (only the north aisle of the nave), Dunstable, Howden, Leominster, Malmesbury, Shrewsbury, Thorney, Waltham, Wymondham; in a few cases, however, the parishioners preferred the eastern part of the

W. G. E. Tewkesbury from North-east

church and relinquished the nave; *e.g.*, Boxgrove (41), Hexham, Pershore, New Shoreham.[1]

[1] If the church was in a town, and especially if it was the only church, the parish sometimes succeeded in retaining the whole church; *e.g.*, the Benedictine churches of Sherborne, Romsey, Selby, Tewkesbury, Nun Monkton, Lynn St. Margaret, Malvern, and Westminster; the churches of Austin Canons at Cartmel, Christchurch, Dorchester, Southwark; and those of Secular Canons at Beverley, Ottery St. Mary, and Wimborne. As a rule the parish had to pay heavily in such a case; at Romsey the cost in our money was about £1,200; at Sherborne about £2,760, including a very moderate lawyer's bill of 14s.; at Malvern about £2,400; at Tewkesbury about £5,436, this sum being arrived at by valuing the lead of the roofs at 5d. a square foot and the bells at about 2½d. per lb. At Dore the church remained roofless until 1632 or thereabout, by which time the nave appears to have fallen into ruin. The choir and transepts were then roofed by Lord Scudamore, and converted into a parish church. Dore being Cistercian, there could have been no parochial claim on the church at the suppression, nor was there any mediæval parish of Dore.

Of the Greater churches which were not parochial at all the chief are those of the Carthusians, the Cistercians, and the Premonstratensian canons, who much resembled in their ways the Cistercian monks. Mr Hodgson has made out a long list[1] of the Greater churches in which the nave or one of its aisles was used as a parish church. Of such Benedictine churches he enumerates 119; among them are Binham, Blyth, Boxgrove, Crowland, Leominster, Pershore, Rochester cathedral,

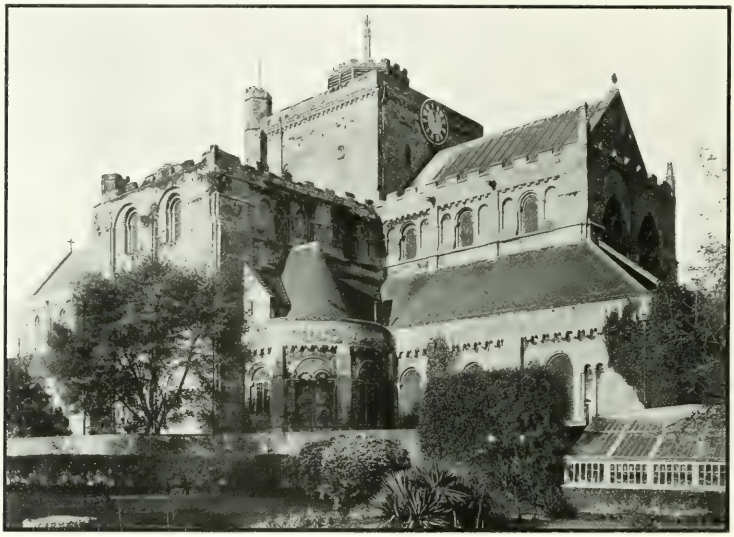
H. F. M. Christchurch

Romsey, Sherborne, Shrewsbury, St. Albans, Tewkesbury, Tynemouth, and Wymondham. Of 218 churches of the Austin Canons, in thirty-seven the nave was parochial; among them were Bourn, Bridlington, Carlisle cathedral, Cartmel, Dorchester, Dunstable, Christchurch, Waltham, and Worksop; all these thirty-seven remain parochial and are still in use.[2] Of the parochial use of a Benedictine nave Sherborne abbey is a leading instance. In front of this church and butting on to its façade was built a parish church, All Hallows, no doubt to get rid of parochial services in the nave. Nevertheless the parochial font remained in the nave; a clear proof that the nave had originally been parochial; and when the

[1] See Rev. J. F. Hodgson's paper on the Austin Canons in the *Archæological Journal*, xli. 374: xlii. 96, 215, 331, 440: xliii. 53, 290, 403.

[2] Carlisle, however, has lost all its nave except the two eastern bays.

monks moved the font further away from its old position near the doorway leading into the south aisle of the monastic nave from All Hallows, the town rose up in indignation, and a priest of All Hallows, as Leland reports, "shot a shaft with fier" into the temporary roof of the chancel, which "chauncing at that time to be thakkid (thatched) was sette a fier," and the lead was melted as well as the bells in the tower; the marks of the fire are still conspicuous on the walls and piers of the chancel and central tower. Elsewhere documentary evidence makes it clear that parishioners had vested rights in a monastic nave; *e.g.*, in the Benedictine cathedral of Rochester



J. S. Romsey from South-east

there were complaints from 1312 onwards about the removal elsewhere in the nave of the parochial altar of St. Nicholas; the dispute was finally settled in 1421 by the building of a new church, the present church of St. Nicholas, north of the nave.[1] In some cases the building of the Greater church had obliterated a pre-existing parish church, and the parishioners vigorously asserted their rights for compensation in the new church; *e.g.*, the Benedictine abbey church of Chester had absorbed the parish church of St. Oswald in building the south transept, which therefore had to be employed as parish church; this transept has an independent entrance for

[1] Hope's *Rochester Cathedral*, 79; see also Addy's *Church and Manor*, 377-378.

F. H. C.

Chester Cathedral: South Transept

the parishioners. Here, as at Rochester, the monks afterwards bought out the parishioners by building them a church of their own a few yards away; but towards the end of the fifteenth century the parish reasserted its rights, got possession of the south transept again and retained it uninterruptedly till 1880. So also at Ely there was formerly to the north of the nave a church of St. Cross; the name is significant, for parochial altars in front of Rood screens had frequently the dedication of St. Cross. The church was erected in the fourteenth century, when probably the parochial altar of St. Cross was transferred to it from the cathedral nave; it was pulled down in 1566, and the parishioners in exchange were granted the Lady chapel, where they still worship. In Hereford cathedral the Lady chapel is the parish church of St. John Baptist.

Sometimes the parochial rights seem to have been confined to one aisle of the nave—the aisle which was most distant from the cloister—thus at Romsey, where the cloister was to the south, an additional aisle, now gone, was built northward of the north aisle of the nave (121). At Leominster, a Benedictine priory, the cloister was to the north and the narrow Norman south aisle seems to have been parochial; in the thirteenth century a broad Gothic aisle was substituted for this; and in the following century yet another broad aisle was added to the south, the eastern portion of which served as the parochial Lady chapel (268).

NUMBER AND POSITION OF ALTARS

In the primitive churches there was but one altar. St. Ignatius, writing in the first century, is quite clear on this point; "There is one bread broken for all; one cup given to all; and one altar only in every church"; and again, "One bishop, one altar." Eusebius, writing in the fourth century, describing the new church at Tyre, speaks of one altar only. St. Augustine, writing *c.* 410, asks the schismatical Donatists, "What are they doing with two altars?" It was not till the fifth century that a plurality of altars came in. Constantine's church of St. Cross, Constantinople, early in that century had not only High altar and two side altars, but four other altars in the corners of the building. In the sixth century Gregory of Tours mentions three altars at Braisnes; at Saintes in the same century the bishop had placed in the church no fewer than thirteen altars, of which, however, four were not consecrated, because relics to be placed in or beneath them were not forthcoming. The Venerable Bede says that in his time (*c.* 700) there were three altars in the church of the Holy Sepulchre at Jerusalem, facing south, north, and west. St. Aldhelm, in a poem of A.D. 725, says that the Princess Bugge built a church with thirteen altars. A poem of Alcuin speaks of York cathedral as having no less than thirty altars:—

"Quae triginta tenet variis ornatibus aras."

At St. Gall there are said to have been seventy altars; the plan, however, does not shew anything like so many. There was certainly a tendency to excessive multiplicity of altars; so much so that in A.D. 805 Charlemagne laid down "non superabundent in ecclesia"; "let there not be a superabundance of them in a church."

F. H. C.

St. Christopher

For the multiplicity of altars there was more than one predisposing motive. In the first place, with the strengthening of belief in the efficacy of intercessory prayer, the desire would grow that those saints whose merits might be pleaded on the Day of Doom should be recognised within the church walls in a definite, tangible fashion. Sometimes the representation of a saint was but a painted figure on the wall plaster; as commonly of St. Christopher, usually placed opposite the chief doorway, that his figure might be the first to strike the eye of those who entered in, and save them from harm that selfsame day.[1] Sometimes it might be a little statue on a bracket fixed to a wall or pillar; and before it might burn a light, funds for which were provided in many a village will.[2] But for many a saint it would be felt that this was insufficient; it was desired that an altar should be dedicated, at which supplication might be made. And the saints were many. There were the great saints of the New Testament, Our Lady, St. Mary Magdalen, St. Joseph, St. John Baptist; the Apostles and Evangelists; there was the white robed army of Martyrs; there were the great Doctors and Fathers of the Church and the founders of Monastic Orders; there was many a famous mediæval saint, St. George, St. Denis, St. Nicholas, and the rest; there were the good men and women of the Anglo-Saxon Church, St. Cuthbert, St. Oswald, St. Etheldreda, St. Frideswide and others; there were hermits, like St. Guthlac, and Celtic missioners innumerable in Wales and Cornwall. Moreover, there was more than one aspect from which a dedication might be regarded; at Durham there was both a Jesus altar and an altar of St. Saviour; elsewhere Our Lady of Grace and Our Lady of Sorrows and St.

[1] At Stockerston, Leicestershire, is a fine fifteenth-century figure of St. Christopher in a stained glass window immediately opposite the south door.—A. H. T. At Terrington St. Clement there remains a statue of St. Christopher and the Child (49).

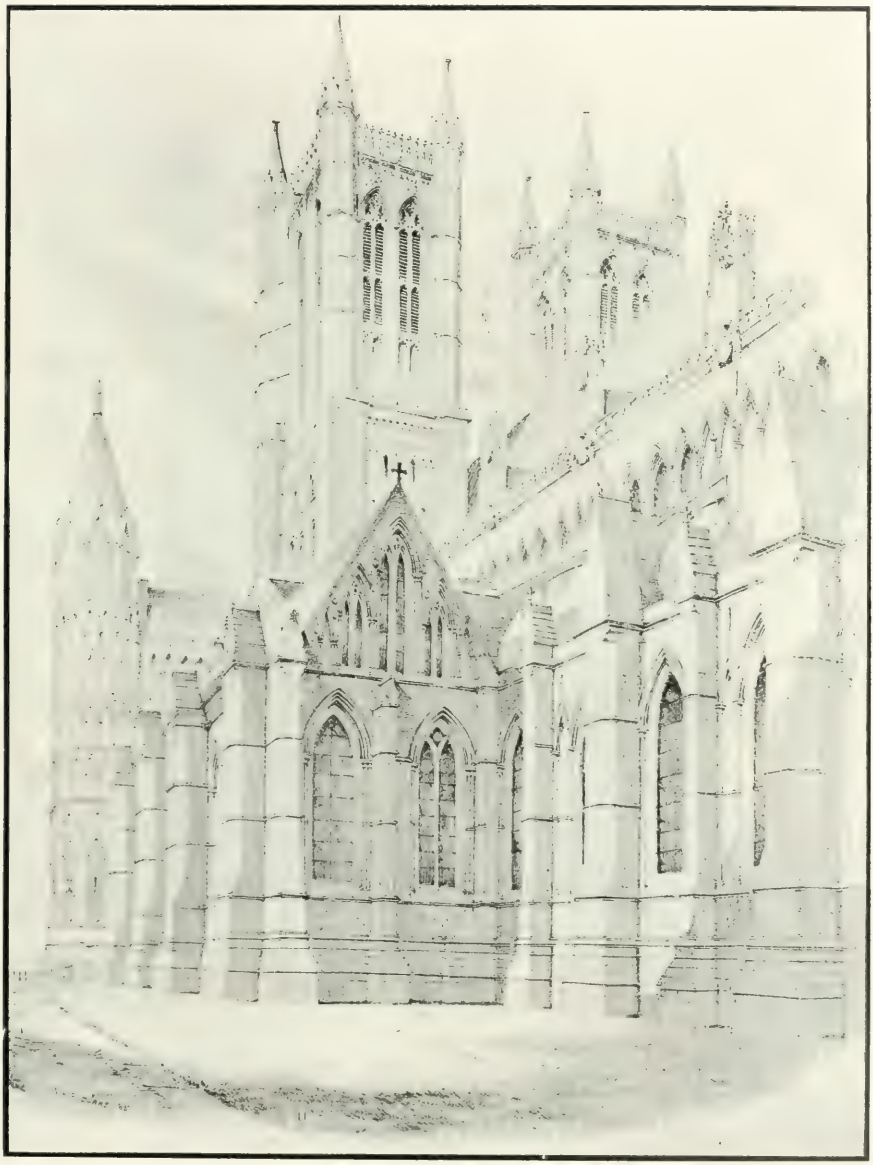
[2] See, among others, the wills of East and West Kent in *Archæologia Cantiana*.

Mary of Charity and Lady St. Mary and Our Lady of Pity with her dead Son on her knees; there was St. Peter and St. Peter *ad vincula*; an altar of the Holy Cross and an altar of the Bound Rood. There was, however, a special reason why numerous altars were necessary in the Greater mediæval churches. Some of these were served by canons, regular or secular, all of whom were in priest's orders; others by monks, who, at any rate in the later days, were all, or nearly all, in priest's orders. Now it was, and is, obligatory for every Catholic priest, except in unavoidable difficulties, to say mass daily, and that before midday. The collective services in choir, however, were numerous, and some of them lengthy; moreover, there was Chapter to be attended every morning. It was difficult therefore, in fact impracticable, for each priest, out of perhaps fifty or sixty, to say his own private mass if altars were few. This is no conjecture: at Fountains abbey it was this very fact that led to the building of the Chapel of the Nine Altars in the time of Abbot John of York (1203-1211).[1] There seems also at times to have been a feeling against using the High altar for anything but the one great service of High Mass. At Clairvaux, in the eighteenth century, the feeling went further still, only one mass *per diem* being allowed to be said at the same altar; so also in some of the Eastern churches.

For one reason or other, then, a very large number of altars was indispensable in the Greater churches: and this fact more than any other dictated their vast dimensions and complex planning. Whereas in the early Christian basilica there had been but one altar to the One God, the builders ultimately had to arrange for what were practically twenty, thirty or more churches under one roof. The question was—Where to place them? The least desirable position for altars was in the nave, at any rate where the nave was more or less subject to parochial use. Nevertheless, as we have seen, there were five altars in the nave of Durham; and at Southwell there were certainly three altars in the nave, if not more, in addition to the parish altar. Sometimes there was an altar in the porch; *e.g.*, in the Anglo-Saxon cathedral of Canterbury and in the Cistercian church of Clairvaux. There is an altar in the parvise of the north porch of Sall church, Norfolk, which from the monograms on the plaster seems to have been a Lady chapel. At Lincoln also magnificent chapels with altars were built, flanking the western bays of the aisles of the nave (51). But all these arrangements were open to objection; services could not be held at altars in the nave, accessible to the laity, without some loss of the privacy and seclusion of a monastic church. Moreover such altars, especially if in the western bays of the nave, must have been inconvenient for the sacristans, whose sacristy was usually in the neighbourhood of the choir.[2]

[1] The Fountains chronicler speaks of there being "pauciora altaria ad celebrandum." Hope's *Fountains*, 8.

[2] *E.g.*, at Durham the *Rites* shew that the Revestry, now destroyed, was south of the south aisle of the choir; at Worcester it was in the same position, but has been restored in ignorance as a chapel; at West-



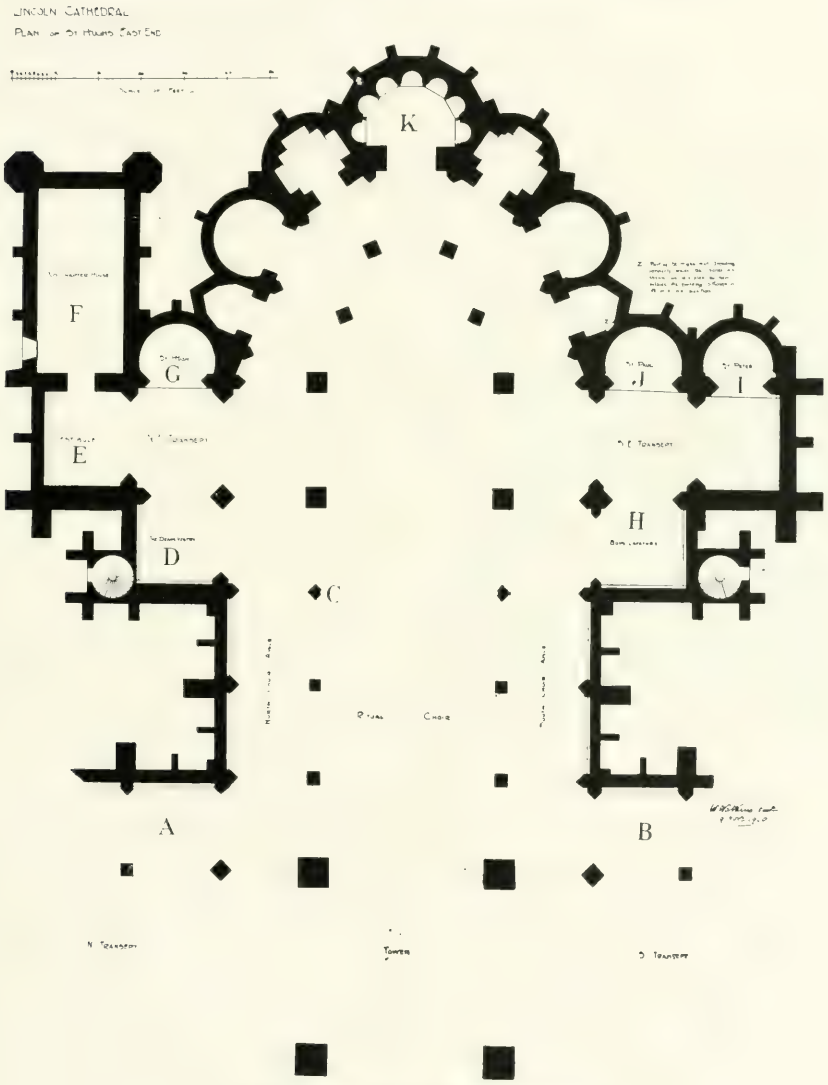
Lincoln Nave from South-east

All the Greater churches, whether of monks or canons, had a screen closing in the ritual choir to the west; and it was usual to place an altar on either side of its

I. H. C. Compton Bassett, Wilts.

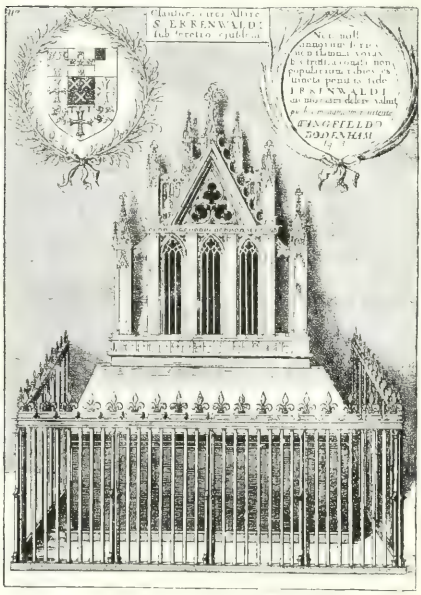
central doorway. Recesses for such altars exist in the screens of Exeter and Southwell cathedrals and of the parish churches of Compton Bassett, Wiltshire (52),

minster the Revestry with the altar of St. Faith at the east end of it, is south of the south transept; the larger sacristy, now destroyed, was probably north of the north aisle of the ritual choir. It is to be noted that it was common for the sacristy to contain an altar: this was convenient for training those about to be ordained priests in the office of the Mass: also canons, called away on a journey in the early morning, could celebrate there before setting out.



Lincoln Cathedral: Plan of St. Hugh's East End

Tattershall, Lincolnshire, and elsewhere. But in the churches of monks and regular canons it was usual to have a second screen, surmounted by a Rood, Mary and John, about one bay west of the Choir screen. This Rood screen, of which a fine example remains at St. Albans, had two lateral doorways[1] for the passage of the double files of the Sunday procession, and between them was an altar placed centrally. This was specially the altar of the laity, and was usually styled the Jesus altar or the altar of the Holy Cross. Sometimes the Rood screen was made broad enough to carry an altar in the loft. Of this there is evidence both architectural and documentary. In a good many churches, both parochial and non-parochial, a piscina may be seen high up to the right of a screen or the site of a screen: and the piscina evidences an altar.[2] Abbot Ware says that in Westminster abbey people used to ascend a staircase on one side for kissing the feet of the Crucifix and descend by a staircase on the other side; the altar in this Rood loft was dedicated to St. Paul and the Crucifix.[3] The Patent Rolls mention an altar in the Rood loft of Grantham church.[4] There were chantry chapels, and therefore altars, in the Rood lofts of Lichfield cathedral and York minster. Other lofts, besides the Rood loft, might contain altars: thus at Durham there was one above the entrance to the north choir aisle from the transept.[5] Altars occur also in sacristies, and even in towers, *e.g.*, Tansor, Northants.



Shrine of St. Erkenwald

The great majority of altars, however, were concentrated round the chancel, the part of the church reserved for themselves by the monks or canons. There

[1] There are also two doorways in the screen walls of Tynemouth priory, Crowland abbey, Boxgrove priory, Dunstable priory, Waltham abbey, Bolton priory, and Newark priory.

[2] A list of fifteen such piscinas is given in the writer's *Screens and Galleries*, 122.

[3] See the writer's *Westminster Abbey*, 65.

[4] Mr A. Hamilton Thompson in *Archæological Journal*, lxvi. 405. For an account of altars in Rood lofts see the writer's *Screens and Galleries*, 122 and 153.

[5] *Rites of Durham*, 18.

was always an important altar at the east end of each choir aisle[1] and in the central chapel at the extreme east end of the church. This eastern chapel was usually employed as a Lady chapel; but in Lincoln minster, since the High altar was dedicated to Our Lady, the easternmost altar had a different dedication, viz., to St. John the Baptist. At Salisbury, which also was dedicated to St. Mary, the eastern Lady chapel had an altar against the eastern wall, dedicated to the Most Holy Trinity and All Hallows (131). In churches of the periapsidal plan altars were placed in chapels radiating from the choir aisles; in the Romanesque churches there were usually three of these, *e.g.*, at Gloucester; but there were five at Lewes. St. Hugh's chancel at Lincoln was set out with seven radiating chapels, of which but a fragment of one survives[2] (53). The Cistercian abbey of Beaulieu in the New Forest had an apsidal chancel from whose aisles projected no less than ten radiating chapels (119).

A. R. T.

Westminster: Sir T. Vaughan's Tomb

Several of the Greater churches, moreover, were happy in the possession of the bones of some great saint or martyr, for whom a shrine, with altar at its west end, was erected a little to the east of the High altar; such a shrine, to which the altar has recently been restored, may be seen in the Confessor's chapel in Westminster abbey (79). Frequently also the later tombs and monuments were contrived that the upper slab should serve as altar slab, room being left at the west end for the celebrant to stand when saying the obits of the deceased; such is the tomb of Sir Thomas Vaughan in Westminster abbey; those of Prince Arthur at Worcester, William of Wykeham and Bishop Fox at Winchester, Henry VII. at Westminster, and others. Sometimes the monument developed into a distinct chapel; *e.g.*, at Ely, where Bishop Alcock is buried against the north wall and the altar is placed against the east wall. At Durham an altar of St. Blaise adjoined the tomb of Bishop Skirlaugh; and to that of Bishop Hatfield "was adioyned a little altar which hee prepared for a monke to say masse for his soule after his death." In a few Romanesque churches the triforium chambers of the chancel and of the eastern and return aisles of the central transept were floored, provided

[1] Except in periapsidal chevets.

[2] See illustration and plan in the paper by Mr W. Watkins and the writer in *Journal of R.I.B.A.*, 3, xviii. 35 and 85.

with windows, and made accessible by broad staircases to altars placed in them; at Gloucester several piscinas and aumbries together with one original altar slab remain in the triforium chamber. Of our Gothic churches Westminster alone seems to have been designed for altars in the triforium chamber;[1] these were never put up, but ornamental corbels may be seen, apparently provided with a view to an altar in the easternmost chapel.

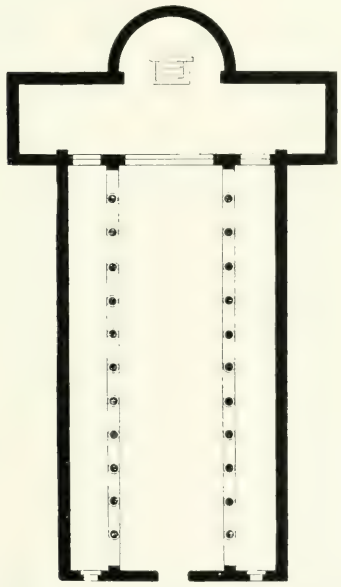
Again, several churches possessed spacious crypts, in which also altars were placed. At Canterbury one of the two Lady chapels was in the crypt; the monogram M may be seen repeated on the vaulting; several of the platforms of altars remain in this and other crypts. Gloucester chancel was practically three-storied; possessing one set of altars in its crypt, another set on the ground floor, and a third in the triforium chamber. The provision of such a host of altars, mainly in the eastern portions of the church, plainly demanded a very large area of floor space and necessitated great ingenuity in planning.

The dedications and position of the altars of Salisbury cathedral have been carefully worked out by Canon Wordsworth. The following list is derived partly from Canon Wordsworth's *Ceremonies and Processions of the Cathedral Church of Salisbury*, 1901; and partly from a list copied and translated by him from a mutilated flyleaf in MS. I. 2, 6, in the library of Emmanuel College, Cambridge; this MS. appears to be *c.* 1400. The position of the following altars is shewn on the plan of Salisbury cathedral (131). (1) The High altar in honour of the Assumption of the Blessed Mary. (2) St. Osmund (1456). (3) St. Martin. (4) St. Katerine. (5) St. Peter and All Apostles. (6) The Most Holy Trinity and All Hallows. (7) ? All Saints. (8) St. Stephen and All Martyrs. (9) St. Mary Magdalen and St. Vincent. (10) St. Nicolas. (11) St. Margaret. (12) St. Lawrence. (13) St. Michael. (14) St. George and St. Denys. (15) St. Andrew and the Holy Ghost (parochial altar). (16) Altar of the Holy Rood (called the altar of the fabric) in the Rood loft in front of the Rood. (17) St. Thomas Martyr and St. Edward, King and Martyr, with the Eleven Thousand Virgins adjoined. (18) St. Edmund the Confessor. (19) St. John the Baptist and All Relics. (20) Altar of Blessed Mary Virgin, in the Treasury. (21) Altar of Our Lord and the Blessed Mary, in the Hungerford chapel, 1471. (22) Altar in Bishop Richard Beauchamp's chantry chapel, 1481. (23) Altar of the Assumption in Bishop Audley's chapel, 1520.

To get more room still for altars, the church might have been lengthened westward; but to this there were two objections. First, it might have been done while the nave was building; but where it had been completed with western towers it could not be prolonged westward without pulling these down; this it was no doubt that to the last prevented Canterbury cathedral from being prolonged to the west, and forced its eastern extension. Secondly, many of the Greater churches

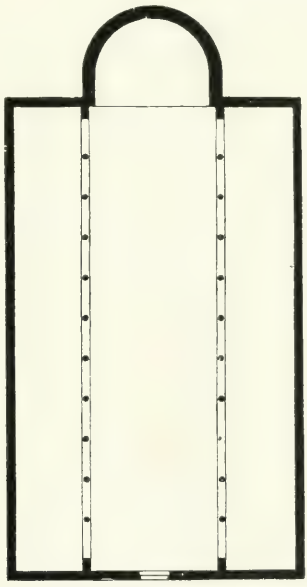
[1] See the writer's *Westminster Abbey*, 100.

were already some 500 ft. long, and occasionally considerably more; to have added another 200 ft. or so would have been very inconvenient; nor would it always have been feasible to find a site of such inordinate length; *e.g.*, Durham cathedral occupies the whole length from east to west which the nature of the ground permits. Since, then, longitudinal extension was undesirable or impracticable, the remedy was to get further sites for altars by building additional limbs at right angles to the main block; in other words, to build transepts. In England the transept was in



C. L.

Rome: S. Maria in Ara Coeli



D. E.

Ravenna: S. Agata

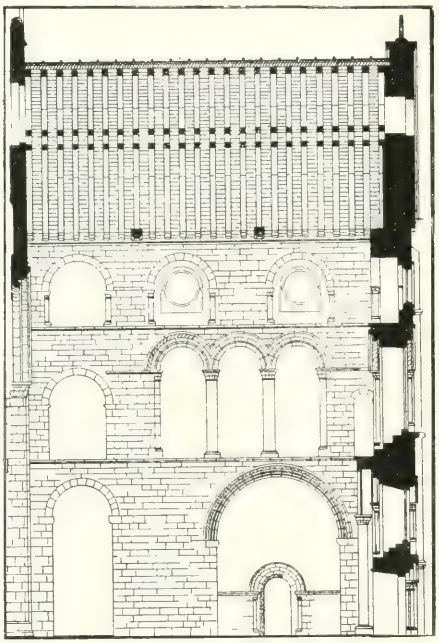
great favour; the central transept of Old St. Paul's had a length of no less than 290 ft. from north to south. Symbolism, as well as convenience, commended this cruciform plan to the faithful. It was written of St. Droctovius, abbot of St. Germain-des-Prés, who died in A.D. 576, that "he built his church cruciform for the sake of the cross of salvation."[1]

The adjunction of northern and southern arms in the form of transepts to the body of the church is of great importance, and needs separate treatment.

[1] "Gratia igitur vivificae crucis ecclesiam in modum crucis aedificare disposuit."

THE CENTRAL TRANSEPT

The early basilicas of Rome and Ravenna may be divided into those which, like S. Sabina, Rome, S. Agata, Ravenna, consist only of aisles, nave, and apse; and those which have also transepts; *e.g.*, Old St. Peter's, St. John Lateran, St. Paul *extra muros*, and S. Maria in Ara Coeli. Transepts were no Christian invention. Vitruvius recommends that where a basilica is disproportionately long, it is better, if more floor space is wanted, to build lateral chambers, *chalcidica in extremis*. This convenient arrangement must have been made familiar to all western Europe by the crowds of pilgrims who resorted to the *incunabula* of the Christian religion in Rome. Transepts are known to have been built in Gaul as early as the sixth century. Gregory of Tours says of the church at Clermont, "Totum aedificium in modum crucis habetur expositum," *i.e.*, it was cruciform; so also was the primitive church of St. Martin de Tours. Between 459 and 560 was built the great cruciform church of St. Simon Stylites in Syria. The cruciform plan commended itself to the clergy, the symbolists and the masons alike. To the clergy it had the recommendation that the transept enabled them to add to the number of the altars of the church, and that, so placed, they were in convenient proximity to the sacristy. To the symbolist the transept was reminiscent of the Cross of the Saviour. And when central towers began to be erected over the crossing, that is over the junction of the chancel, nave, and transepts, the east and west walls of the transepts provided excellent abutment for the eastern and western arches which carried the central tower. In our Anglo-Norman architecture almost all the Greater churches had transepts; Llandaff cathedral is an exception; they were equally popular in Gothic days. At Old St. Paul's, London, the English transept reached its greatest length, providing room for no less than eight altars. The simplest form of transept was without aisles,



E. C. Southwell: East Side of South Transept

as at Canterbury cathedral; but it had an apsidal chapel projecting eastward from each arm; these apsidal chapels were frequently two stories high, *e.g.*, at Tewkesbury (59) and Southwell (58). Sometimes there were two apsidal chapels to each arm, and the inner chapels might project further than the outer ones; this was so at St. Albans (123) and at St. Mary's, York (122). A great improvement was to substitute aisles for apses. This was done *c.* 1079 at Winchester, *c.* 1083 in Ely, and *c.* 1093 at Durham. Each bay of the eastern aisles formed a chapel; at Ely and in the Cistercian abbey churches, *e.g.*, Kirkstall, these chapels were completely walled off from one another (161); at Lincoln and Dore,[1] *c.* 1200, the separating walls were low (60); later, open screenwork was employed instead of walls; the chapels were separated from the transept also by screens. At Bury St. Edmund's, begun in 1085, there were by exception not only eastern aisles, but also an apsidal chapel projecting from the extremity of each transept. At Glastonbury, begun in 1184, each transept had an eastern aisle from which again two rectangular chapels projected to the east. At Vale Royal, founded in 1277, the north transept had three eastern chapels. Few early churches had return aisles as well; viz., Winchester cathedral, which retains them (61); Ely, where they have been set back, and Lanfranc's Canterbury, where they have been removed. These would provide means of access to any

58 Tewkesbury: East Side of South Transept

[1] The low walls at Dore have been removed, but their projecting ends are shewn on p. 60

upper chapels of transeptal apses, and might themselves contain altars; they might be used for other purposes also; *e.g.*, to carry organs or for the exposition of relics.

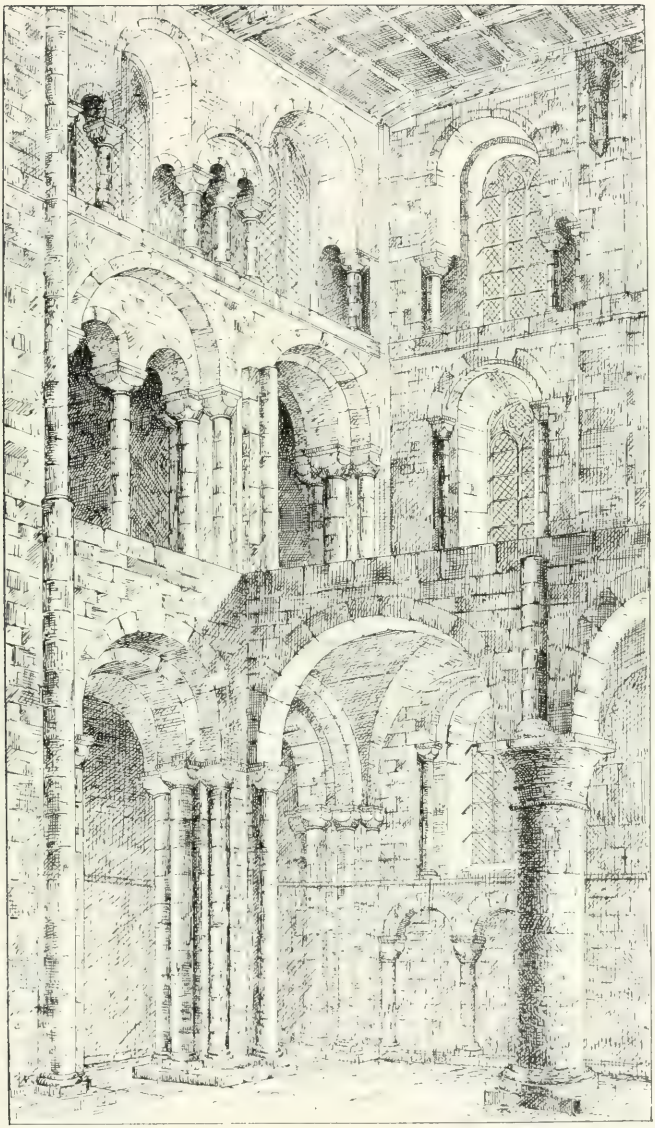
A few of the Greater churches had a western aisle also to their transepts; the list includes Winchester, Ely, Croyland, begun 1113, Byland, a Cistercian abbey, *c.* 1170, Wells cathedral, *c.* 1200 (131), Old St. Paul's (3), Beverley

E. M. L. Dore Retro-choir from North

E. P. Dore Rétro-choir from South

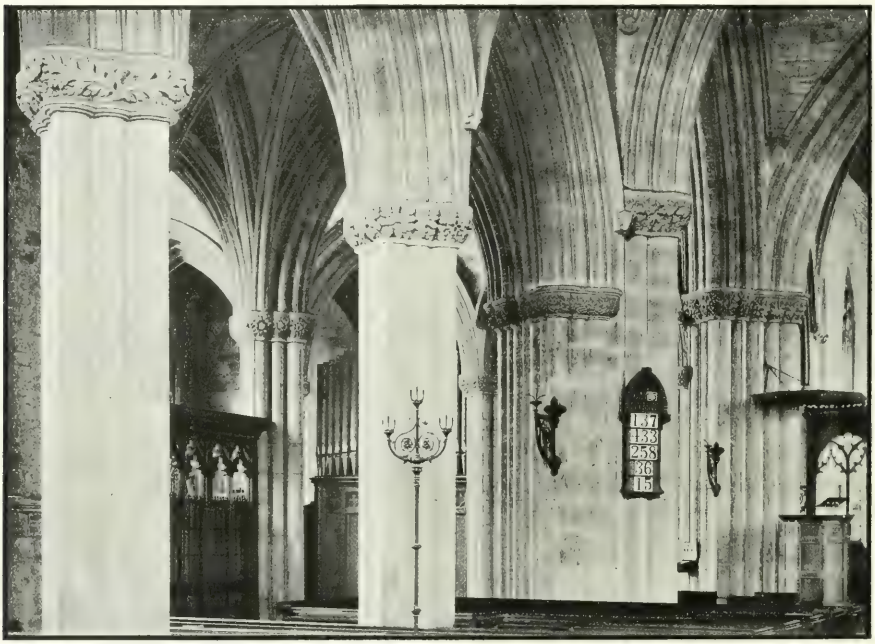
minster, *c.* 1225 (6), York minster, *c.* 1240, Westminster, *c.* 1245, and Chester cathedral, *c.* 1330, where, however, only the southern arm of the transept had a western aisle.[1] This, however, was not well adapted for altars placed, as they would have to be, beneath the arches of the western aisles; for there would be hardly room for anyone except the celebrant and his servers; nevertheless the plan of Clairvaux shews two altars in each western aisle of the transepts; and

[1] Certain parish churches also had double-aisled transepts; *e.g.*, Faversham, St. Mary Redcliffe, Bristol, Melton Mowbray, Patrington (62).



E. G. H. Winchester : North Transept

similar arrangements are found in other Cistercian churches; probably in our own Byland. It is likely, however, that the western aisles of transepts were more often utilised as sacristies; *e.g.*, the western aisle added to the south transept at Peterborough; at Wells the western aisle of the north transept looks as if it had been built as a sacristy; at Lincoln also the sacristies appear to have been disposed on the western side of the choir transepts at D and H (53).



F. H. C. Patrington: North Transept from the Nave

THE WESTERN TRANSEPT

Some of the greater Roman basilicas, *e.g.*, Old St. Peter's, Rome, had an *atrium* or cloister in front of the west end; a few mediæval examples also survive, *e.g.*, the atrium of S. Ambrogio, Milan, built early in the twelfth century. More often at Rome, and universally in Ravenna, only one of the four walks of the fore-cloister was built, viz., that immediately adjoining the west end of the nave. This *narthex*, as it is called, was developed into a large fore-church in several

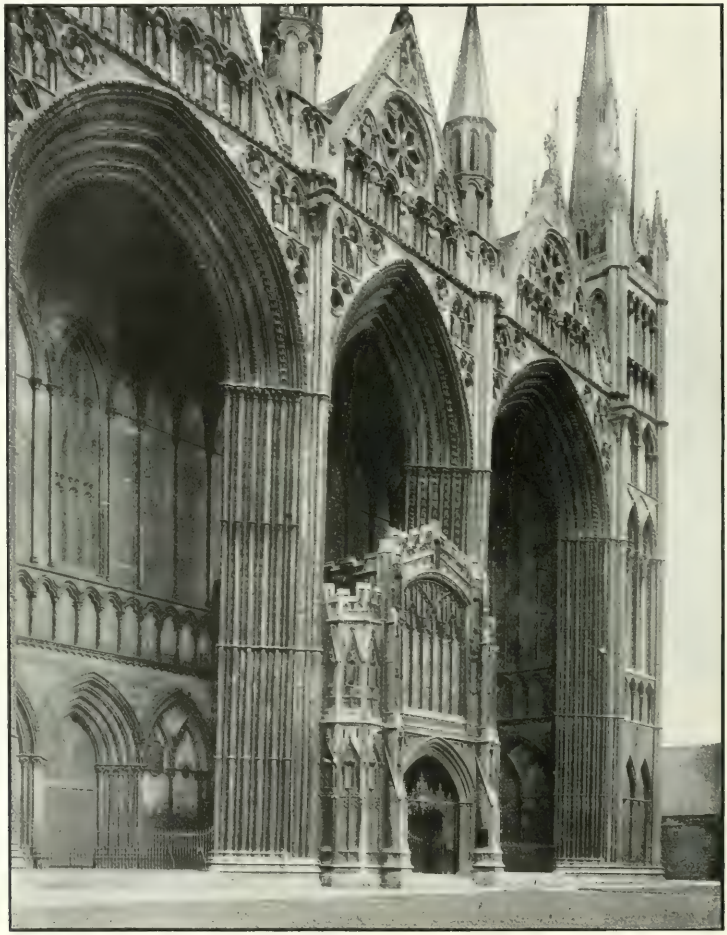
great churches in Burgundy, especially those of the Cluniac order; *e.g.*, Vézelay and Paray-le-Monial (Cluniac), Tournus and St. Benoît-sur-Loire (Benedictine) and Autun cathedral (secular canons). In the Cistercian order it dwindled down again to a continuous pent-house along the lower part of the west front; fragments remain at Fountains, Byland and Rievaulx, Yorkshire, and formerly at Newminster, Northumberland. At Byland the narthex went by the name of Galilee. Of the western Galilee porch we have in use but one genuine example; that at Ely, where an immense western porch was set out in Norman days, but apparently not built till the early years of the thirteenth century. The so-called Galilee at Durham is really a Lady chapel; that at Glastonbury was built to link up the nave to the detached Lady chapel (wrongly styled St. Joseph's chapel).

I. E. Fountains Narthex

With the ancient forecourt and narthex we may perhaps connect the western transept. In its simpler form this consists in making two western towers flank the aisles, instead of being in a line with them. This is the plan of the western transept of Wells cathedral[1] (131), and was formerly that of the Norman priory church of St. Botolph, Colchester. Arches intended to lead into flanking towers, which, however, were never carried up, are to be seen at St. Albans; they are of the time of Abbot John de Cella (1195-1214). At Ripon also, before the aisles were built, the nave had flanking towers. In the second and more ambitious plan, the western transept is continued for some distance north and south of the flanking towers. This is the plan of the Gothic façades of Peterborough (64) and Lincoln, and partially of the Norman transepts of Bury and Ely (65). Externally the effect of so great a breadth of façade is very imposing; ritualistically it was objectionable to have altars in such far-away western chapels. At Lincoln (137) two of the four western chapels seem never to have been completed; one used to be used as a ringers' room, and on the walls are recorded their exploits in bob majors; the other till lately was used as a coal cellar; which, considering the great beauty of the doorway molds and of the carved capitals

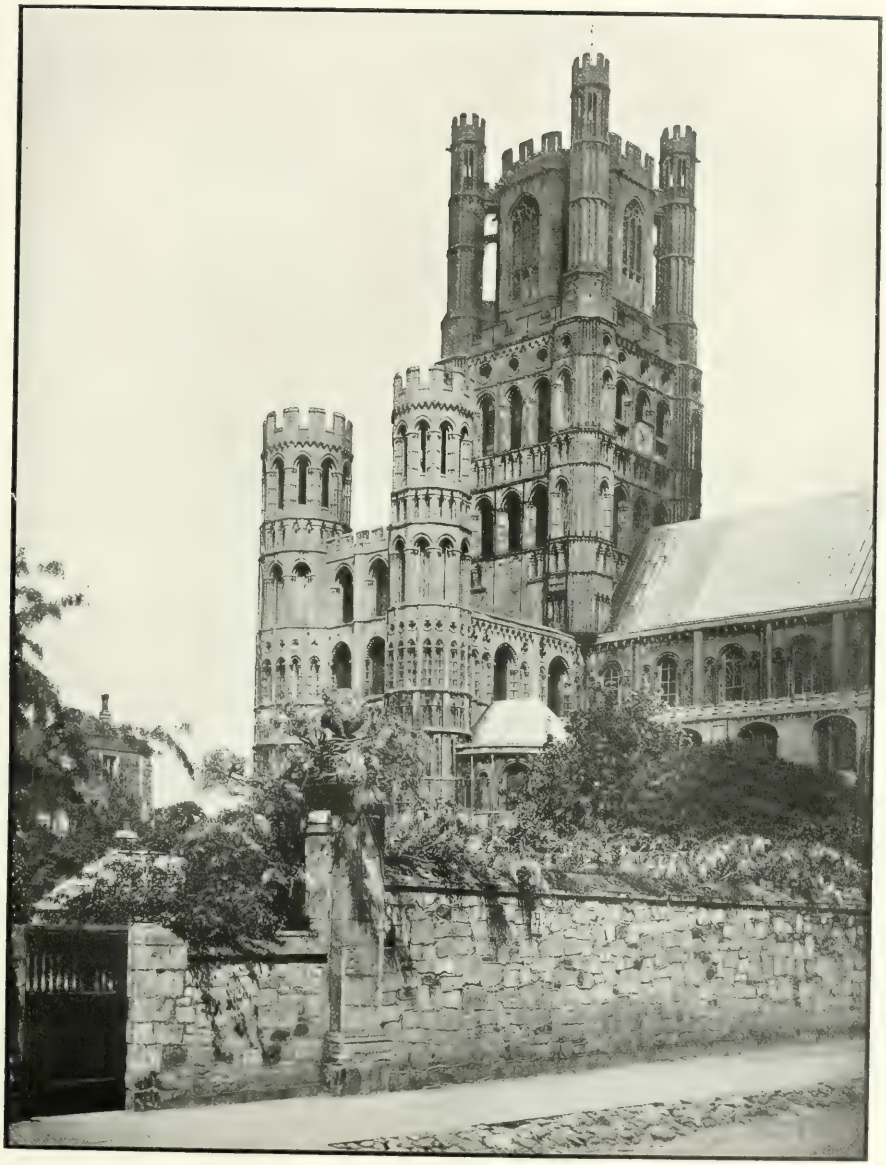
[1] At Wells the ground story of the south tower served as a porch; in the north tower was an altar.

within, was, to say the least, undesirable. With the flanking chapels of Lincoln



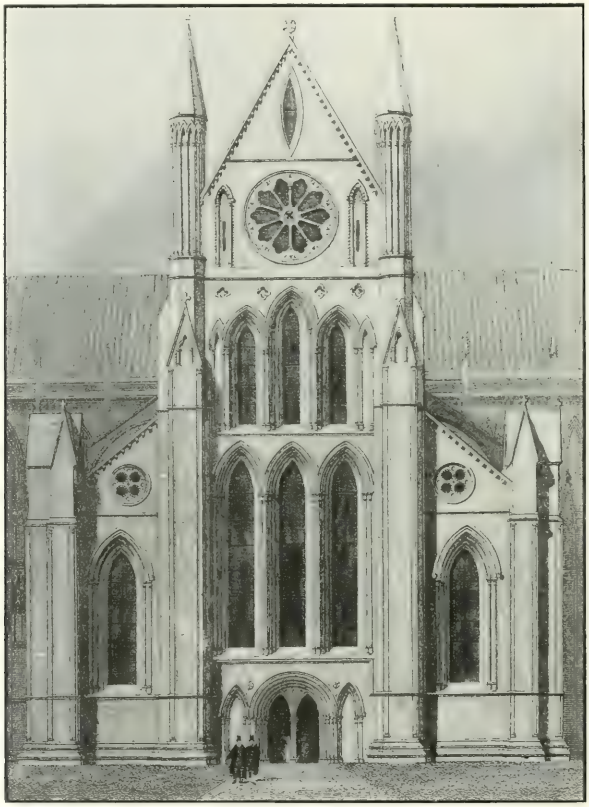
I. F. H. Peterborough Cathedral from North-west

nave may be compared those of Sir Christopher Wren in St. Paul's, London. Western transepts were by no means common abroad; examples occur at St.



Ely Cathedral: Western Tower and Western Transept

Riquier, France, in the eighth century, at Gernrode, begun *c.* 961, Quedlinburg, *c.* 997, Augsburg cathedral, 994-1006, Regensburg, Obermünster, consecrated



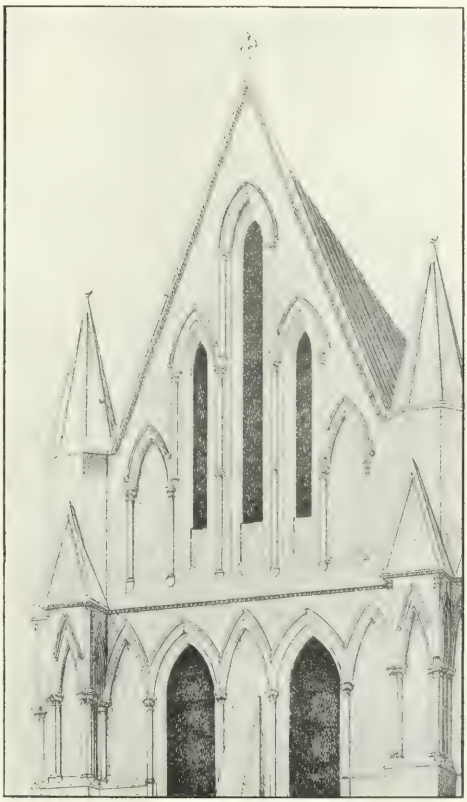
I. R. Beverley Minster: North Transept

in 1010, Regensburg, S. Emmeran, 1052. These, however, are considerably inferior to the English examples in scale and complexity.

THE EASTERN TRANSEPT

The western transept, as a receptacle for altars, was by no means a success: its place was taken by the eastern transept, which in the thirteenth century was greatly

in favour, and to which several of our greatest churches owe the noblest of their external and internal effects. Early examples of the choir transept occur at St. Benoît-sur-Loire, a Benedictine church whose choir was consecrated in 1029 (126); Cluny, commenced in 1089; and the Cluniac church of Souvigny; the other examples remaining in France are at Besançon, Verdun, and St. Quentin; eastern transepts never became popular in France. In England they first appeared in Priors Ernulph and Conrad's choir at Canterbury (117), where each of them has two apsidal chapels to the east; this Canterbury arrangement was copied in 1192 at Lincoln[1] (53). The Cluniac church of Lewes also had built an eastern transept early in the twelfth century. Of the Greater Gothic churches Rochester, Salisbury, Worcester, and Beverley set out eastern transepts in the first half of the thirteenth century, and Bayham, Sussex, *c.* 1300. On a humbler scale are the eastern transepts of Hereford (1186-1199), Southwell (*c.* 1230), Exeter (*c.* 1280), Ottery (*c.* 1337), Wells (*c.* 1340); whereas the first set of transepts were three stories high, the latter had but a single story.[2] Both sets were equally serviceable in providing additional sites for altars, and both, seen from without, broke up



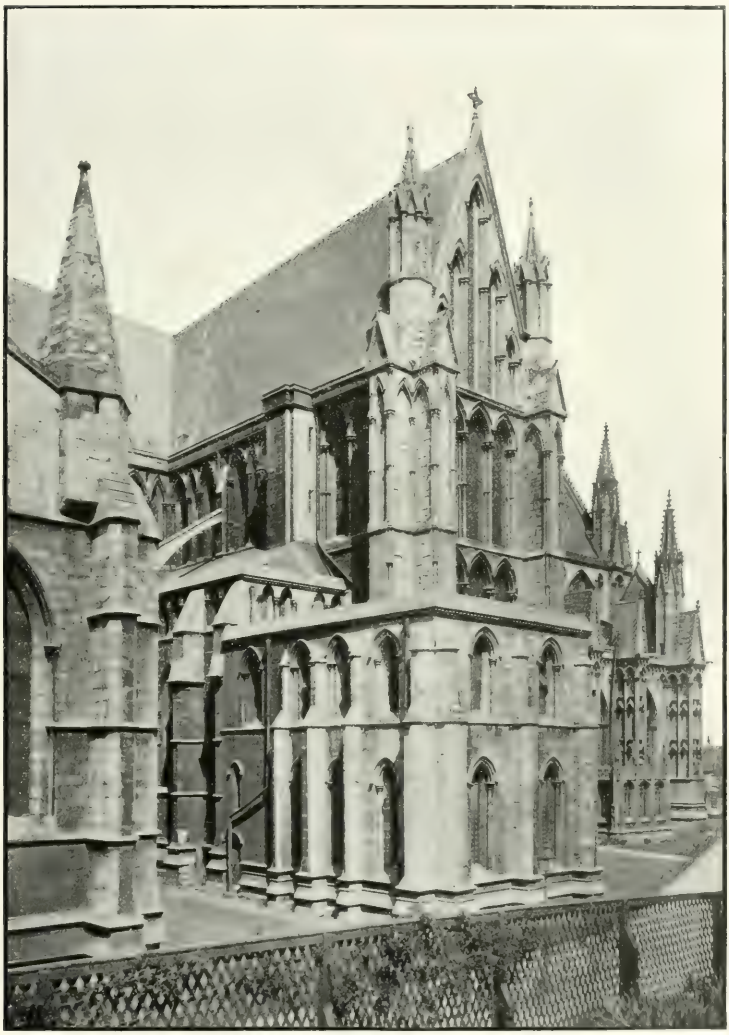
E. S. Lincoln: North-east Transept

[1] As to the date of the Lincoln transept see paper by Mr Watkins and the writer in the *Journal of the R.I.B.A.*, 26th Nov. 1910.

[2] It is suggested that we should speak of these as *transeptal chapels*, and restrict the term *transept* to those cross-arms which not only project beyond the aisles but are carried up to the level of the chancel roof: unfortunately the term would be ambiguous, for it would apply also to the eastern chapels of the central and western transepts: *e.g.*, Romsey (46), Kirkstall (161), and Ely (65).

successfully the long horizontal lines of the English chancels; internally, the high transepts, with ground story, triforium, and clerestory, were infinitely more effective. An interesting variation of the second type of transept is seen at York; here, about midway in the chancel, a single bay of the aisle is raised to the same height as the central aisle of the chancel; it does not project beyond the other bays of the aisles and therefore it is not a transept; nevertheless, both externally and internally, it has the impressiveness of a transept proper (891). It is noteworthy that the eastern wall of each choir transept or its representative was usually built in a line with the High altar; this is still the position of the High altar at Beverley and Worcester (133), and was formerly so at Lincoln (in 1192) and York; and also probably at Southwell, where, in a modern restoration, the High altar has unfortunately been placed against the eastern wall of what was the Lady chapel (135). When lined with the eastern transept, the High altar would gain immensely in dignity, and in addition would be excellently lighted; at York in particular the illumination must have been splendid. Yet another development of the eastern transept was to place it at the extreme east end of the church, making the plan hammer headed: a precisely similar plan is found in many of the churches of Friars in Italy; *e.g.*, S. Croce, Florence, and S. Domenico, Siena, where to a vast nave built for preaching there was added a long eastern transept with a row of altars for the use of the friars. Of this plan we have but two examples in England, Fountains and Durham; in both the transept goes by the name of the Chapel of the Nine Altars, which sufficiently explains its purpose (10, 127).

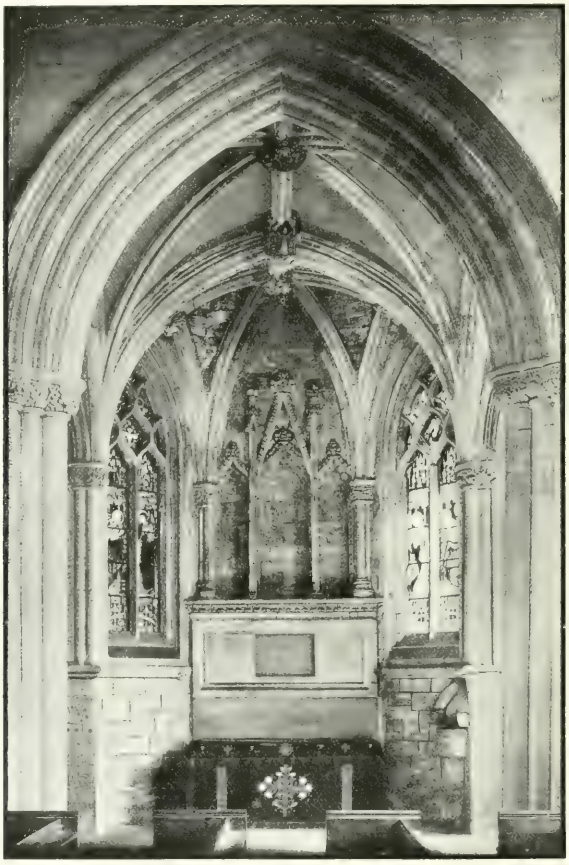
I. F. H. Chichester: Lady Chapel



Lincoln: South-east Transept

CHAPELS

There were, however, gradations of sanctity; in no case could each and every saint be indulged with an altar. With most churches was connected some special



C. C. Patrington: Lady Chapel

saint, and for his or her altar the most important chapel in the church was built; *e.g.*, for the Confessor at Westminster in 1245 and St. Thomas at Canterbury in 1175 (117).

Salisbury: Lady Chapel from North-west

At St. Augustine's, Canterbury, the easternmost chapel of the ambulatory contained the altar of the first missionary of Christianity in Southern England (122). At Lincoln St. Hugh dedicated the easternmost chapel (53, K) to his patron, St. John Baptist; some sixty years later the so-called Angel choir was built, the central part of which formed a chapel containing St. Hugh's shrine and altar (137). Normally Our Lady's chapel exceeded the rest in size and splendour, and was the easternmost chapel in the church; but occasionally her chapel was built north or south of the choir, as at Ely, Oxford, Bury, and Peterborough, leaving the great local saint in possession of the retro-choir. There was a constant tendency to enlarge the Lady chapel; thus in Gloucester cathedral the Lady chapel was originally a small apsidal chapel; this seems to have been pulled down and replaced by a rectangular chapel in the thirteenth century;[1] and finally by the present magnificent chapel in the fifteenth century (351). The services of the Blessed Virgin continually increased in splendour, especially after polyphonic music supplanted plain song; and as they were attended by the whole body of monks or canons, as much room was wanted in the Lady chapel as in the choir. At Gloucester galleries are provided on either side of the Lady chapel for organs to accompany these services. Numerous other chapels were built for more important altars, of which more anon. In founding a college of six priests in 1333 in the parish church of Lowthorpe, Yorkshire, which was dedicated to St. Martin, Sir John Hesherton gives as a special reason that there are many persons there "who are attached to the worship of the Holy Trinity and St. Mary, and are desirous of daily service in their honour."[2]

It may be added that space was needed also for the exposition of numerous reliquaries and other treasures of the church; chapels projecting from the chancel aisles were particularly well suited for this purpose; for the doors leading from the transept into the chancel and its aisles were kept locked; and at any rate from the fourteenth century the chapels were protected by stout oaken screens or iron railings; *e.g.*, the chapels of St. Edmund and St. Benedict at Westminster; where also the gates of the chancel aisles occupy the original position.[3]

RELICS, SHRINES, AND PILGRIMS

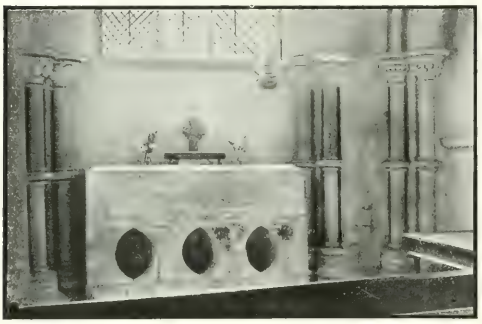
An early Christian church, being nearly all nave, must have been planned mainly for congregational purposes. In some cases, however, the basilicas were more than congregational. Where in a gallery of the catacomb beneath there was buried the body of some famous saint or martyr, a St. Peter, a St. Paul, a St. Lawrence, a St. Agnes, the basilica was also a Relic and Memorial church, and soon became a Pilgrims' church. And if the burial place of the saint or martyr was in a remote and

[1] The so-called Reliquary may have formed its entrance.
A. Hamilton Thompson's *Historical Growth of the English Parish Church*, 26.
[3] See the writer's *Westminster Abbey*, 44, 67.

I. R. L. S.

Wells: Lady Chapel

uninhabited suburb outside the city, such a church would tend to be less and less of a congregational church and more and more of a Relic and Pilgrim church. This was so throughout Christendom. The result was that there arose two classes of churches, which became more and more differentiated as time rolled on. Then came the question: Who should take charge of the services of Pilgrim churches? In some cases they were left to the Secular canons of the cathedrals and collegiate churches; *e.g.*, the body of St. Candida or St. White lay, and lies still, in the parish church, once collegiate, of Whitchurch Canonicorum, Dorset;[1] the Secular canons of Lichfield cathedral provided the services at the shrine of St. Chad, and so on. In France it is exceptional to find cathedrals, like Chartres[2] and Le Puy, which were also great Pilgrim churches. In both countries it is more common to find orders of monks or Regular canons serving the Pilgrim churches; and as the Benedictine was the one great western order of Regulars from the sixth to the tenth century, the great majority of Pilgrim churches naturally were served by Benedictine monks. Among the more famous Pilgrim churches in France—all served by Benedictine monks—were St. Martin de Tours, St. Denis, Fécamp, where, as at the Cistercian abbey church of Hayles in England, was shewn a portion of the Holy Blood; Charroux, where Charlemagne deposited a large piece of the True Cross, and St. Sernin, Toulouse, to which the counts of Toulouse were said to have brought from Palestine the bones of six of the Apostles.[3] In England also the majority of the Pilgrim churches were Benedictine; *e.g.*, Canterbury, with the remains of St. Thomas; Durham, with those of St. Cuthbert and St. Oswald; Ely, with those of St. Etheldreda; Rochester, with those of St. William of Perth; Winchester, with those of St. Swithun; Worcester, with those of St. Oswald and St. Wulfstan; Bury, with those of St. Edmund; Crowland, with those of St. Guthlac; Malmesbury, with those



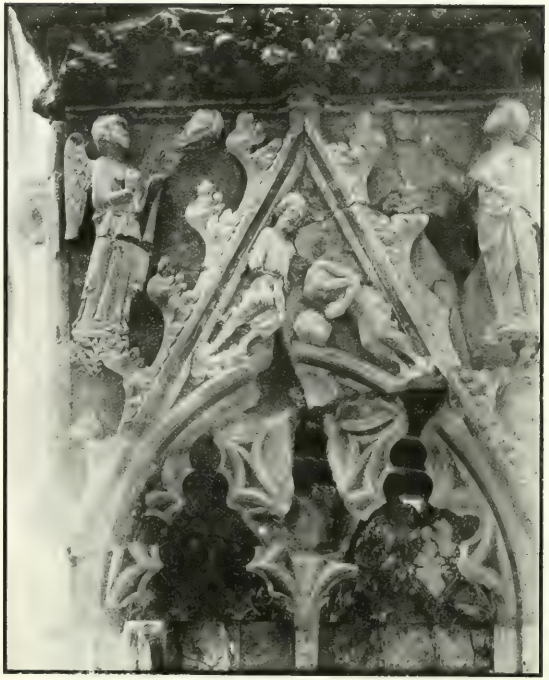
E. K. P. Shrine of St. Candida

[1] See paper by Miss E. K. Prideaux in *Archæological Journal*, lxiv. 119.

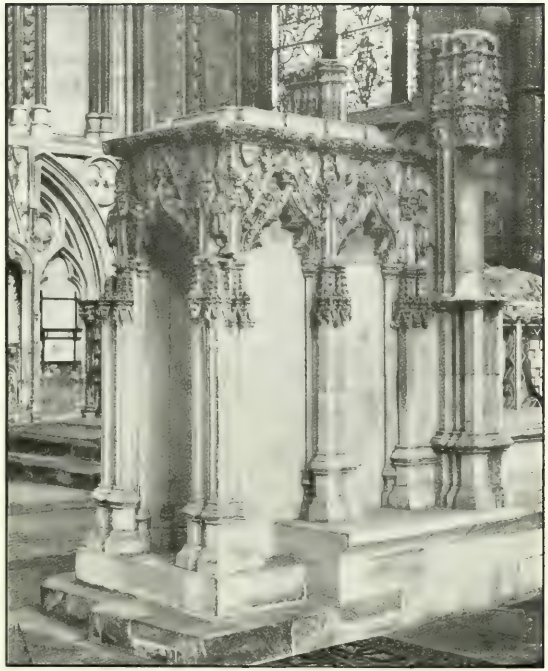
[2] Fulbert, Bishop of Chartres, rebuilt his church after the fire of 1020, on an unusually large scale and with a periapsidal crypt, because of the necessity of ordering the long processions of pilgrims who came to Chartres on certain days to venerate the miraculous statue of the Blessed Virgin and the seamless coat of Christ. R. de Lasteyrie's *Architecture romane*, 235 and 307.

[3] Anthyme St. Paul; *Histoire Monumentale*, 72 and 87.

I. R. P. S. Bristol: Elder Lady Chapel



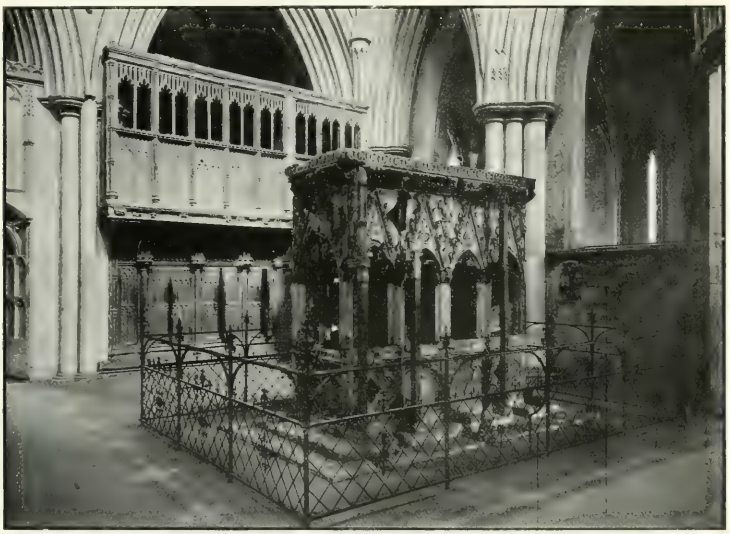
C. L. N. St. Albans: Martyrdom of St. Alban



N. S. Lincoln Minster: Pedestal of Shrine

of St. Aldhelm; Pershore, with those of St. Edburga; St. Albans, with those of St. Alban and St. Amphibalus; Shaftesbury, with those of St. Edward, King and Martyr; Tynemouth, with those of St. Oswin; Westminster, with those of the Confessor; and others. Some churches acquired fame from a minor relic; Peterborough was regarded so holy that pilgrims took off their shoes when they passed its great gateway, and a pilgrimage to Peterborough was accepted as equivalent to a pilgrimage to Rome.[1]

In England, however, many canons' churches also possessed famous relics,



P. S. St. Albans: Feretory

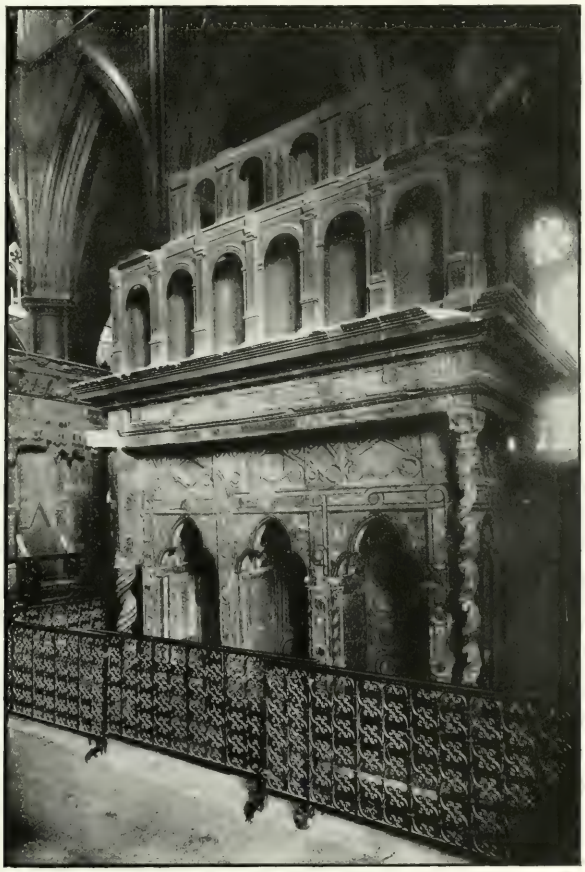
[1] Its great treasure was the incorrupt arm of King Oswald of Northumbria, slain in battle with Penda, the heathen king of Mercia, A.D. 633, "praying for his soldiers 'Lord have mercy upon their souls' said Oswald as he fell"; so Bede tells us. The head, arms and hands by Penda's orders were nailed to a stake at *Oswestry*, "Oswald's tree." Later, the skull was carried to Durham cathedral, where to this day it abides in the same coffin as the body of St. Cuthbert. The arms were taken to Bamburgh and Peterborough, and were found to be incorrupt. Then people remembered how one Easter day the king was sitting at dinner with the missioner Aidan, and a silver dish of dainties was before him. And as they were about to bless the bread, his servant came and said that a great multitude of poor was without. Whereupon the king sent out the meat to the poor, and the silver dish to be broken in pieces and given unto them. And Aidan laid hold of the king's right hand and said "May this hand never perish." And, says Bede, the arm remained entire and uncorrupted to this day, kept in a silver case among the treasures of Peterborough abbey.

and were the resort of pilgrims; *e.g.*, of the cathedrals served by Secular canons there was Chichester, with the relics of St. Richard; Hereford, with those of St. Ethelbert and St. Thomas; Lichfield, with those of St. Chad; Lincoln, with those of St. Hugh; St. Paul's, London, with those of St. Erkenwald; St. David's, with those of St. David; Salisbury, with those of St. Osmund; York, with those of St. William of York; and among the collegiate churches Beverley minster, with those of St. John of Beverley. Of churches of the Regular canons there was Waltham, with the cross that had been drawn by oxen across from the west of England till it took root at Waltham; Walsingham, which was reputed, like Loreto,

G. G. B. Shrine of St. Thomas of Hereford

to possess a reproduction or model of the little cottage wherein the Blessed Virgin had dwelt at Nazareth; and others. All the above possessed a host of relics besides those mentioned above. In such churches as those mentioned previously which had the good fortune to possess the body of some one great local saint, such as St. Cuthbert at Durham or St. Hugh at Lincoln, it became necessary in the end, as we shall see later, to make special architectural arrangements for the reception of great crowds of pilgrims. Churches, on the other hand, which had fewer attractions for pilgrims, might retain their original plan unaltered, or but little altered, to the end; *e.g.*, the cathedrals of Norwich and Gloucester; Peterborough

itself was not remodelled till the end of the fifteenth century, and then only to a comparatively slight extent. But even these churches also had to be planned to a large extent with a view to the safe custody and the exposition of relics and the



F. R. F. Westminster: Shrine of the Confessor

jewelled caskets plated with gold and silver in which they were preserved. For the exposition of the very numerous relics to pilgrims numerous chapels were required with aumbries in the wall in which smaller relics might be kept when

W. F

Oxford Cathedral : St. Frideswide's Shrine

H. E.

Oxford Cathedral : Latin Chapel

not being shewn. At Westminster the chief relics were originally kept in a great relic-cupboard which stood in the chapel of the Confessor; afterwards they were kept in the elevated chapel of the Annunciation which Henry V. built as his chantry chapel.[1] At St. Albans there is preserved the great oaken relic cupboard (77); that at Selby perished recently by fire. At Oxford (81) the monument under the last arch on the right has above it a chamber of oak; this was probably at once the chantry chapel of the deceased and the watching loft of the neighbouring shrine of St. Frideswide (80). Small reliquaries might be exposed on a beam above an altar. A valuable illustration[2] in a MS. written *c.* 1414, now in the possession of Trinity Hall, Cambridge, shews the position of several of the reliquaries in St. Augustine's abbey church at Canterbury. On a low shelf above the altar were relics of King Ethelbert of Kent, flanked by the books sent from Rome to St. Augustine by Gregory the Great; and on a beam higher up are two reliquaries, one of them containing relics of St. Letard. The crypt of the church has lately been disinterred, and shews a semicircular aisle from which radiate three apsidal chapels (122). In the eastern chapel on the ground floor the drawing shews the shrine of St. Augustine himself, with two minor shrines; in the north-east chapel is the shrine of St. Mildred; in the south-east chapel that of St. Adrian; eight minor shrines or reliquaries stood between the chapels. Similar no doubt were the arrangements elsewhere.

F. H. C. Lastingham Crypt, Yorkshire

[1] See the writer's *Westminster Abbey*, 148, 180, 192, 238; and for a list of the Westminster relics see Flete's *History of Westminster Abbey*, edited by Dean Robinson.

[2] Reproduced in Wall's *Shrines of British Saints*, 20.

Many of these relics were esteemed of miraculous efficacy, and were visited by crowds of pilgrims, such as nowadays flock to Paray-le-Monial and Lourdes. In Gloucester abbey, where miracles were reported at the tomb of the murdered king, Edward II., buried there in 1327, such was the concourse of pilgrims and so liberal their offerings, that they sufficed to pay for the vault and stalls of the chancel and crossing, finished before 1377; and the chronicler reports that the money was enough to have rebuilt the whole church if the monks had wished.[1] For

C. F. N. Oxford: Crypt of St. Peter-in-the-East, looking East

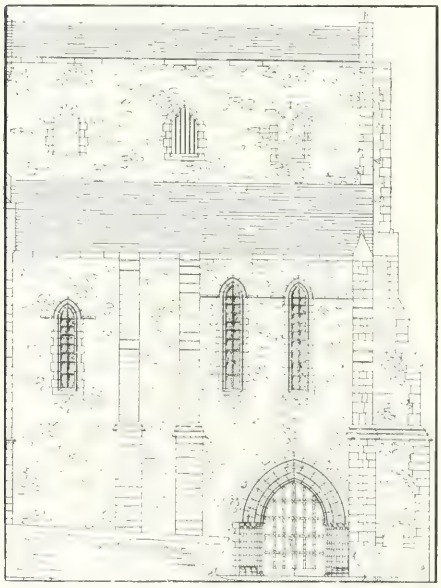
these crowds there was needed a great nave, where they might assemble and find shelter, and where addresses might be given to them. And as the greater part of the relics were kept in the chancel and its chapel, an aisle was needed round the chancel, by which the pilgrims might pass along, seeing each chapel with its relics in turn, but without trespassing on the sanctuary or choir. Till such a pilgrims'

[1] The south doorway of the south transept of Gloucester is still known as the Pilgrim's doorway; similar doorways occur elsewhere in the transept which is on the opposite side of the nave to the cloister; *e.g.*, Peterborough, Ely, and Winchester.

route was arranged, loss of life and limb might and sometimes did occur when currents of pilgrims met, struggling to pass each other.

THE CRYPT AND THE CHARNEL HOUSE

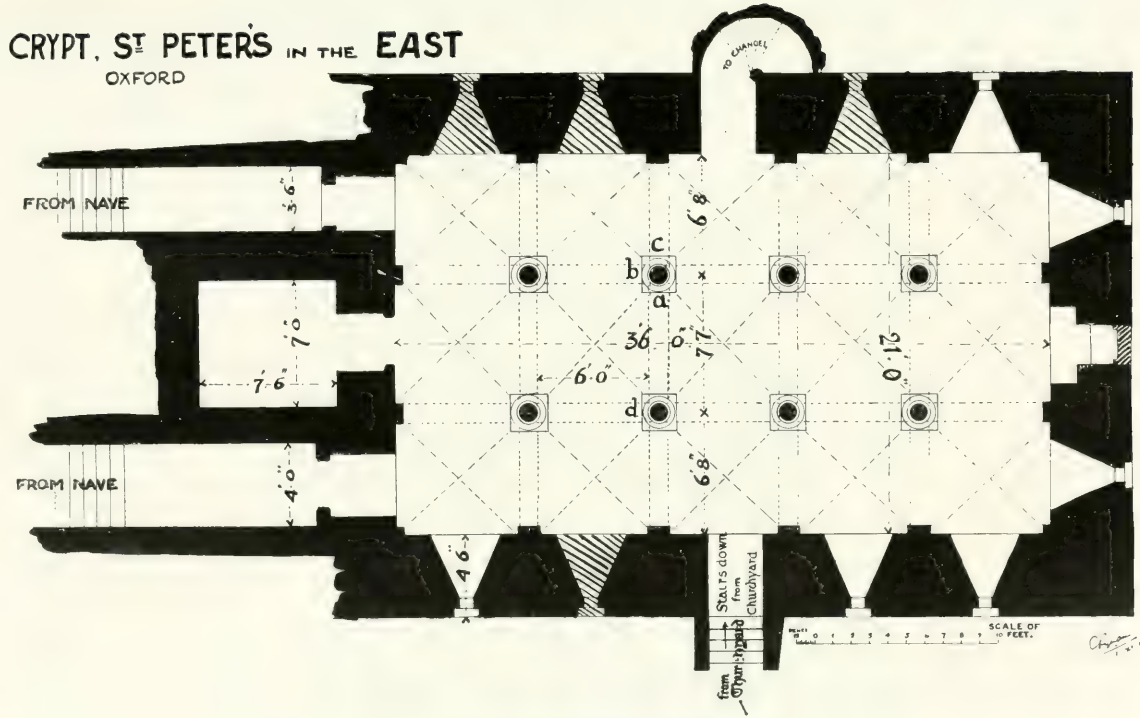
Beneath the chancel of many of the Greater churches crypts were built. This usage goes back to the earliest days of the Church in Rome, when Pagan and Christian alike were buried in the galleries of the catacombs outside the city. After the Peace of the Church, basilicas were erected over the tombs of some of the more famous martyrs; in a few cases, *e.g.*, the basilica of S. Petronilla, all the soil above the gallery was cleared away till the site of the church was thrown open to the sky, and an underground church was formed, which was then roofed over. These Memorial Churches, whether above ground or below, were visited by the faithful from all over Europe; and every country became familiarised with the idea of a church's High altar resting on an undercroft wherein was interred the church's patron saint. These undercrofts were of two sorts. The humbler, the *Confessio* or *Martyrium*, was but a cavity of moderate dimensions beneath the High altar, containing the holy relics.[1] Sometimes, perhaps usually, the front of the altar was grated or perforated, that the relics might be viewed from the floor of the church.



R. P. Hythe: South Chancel

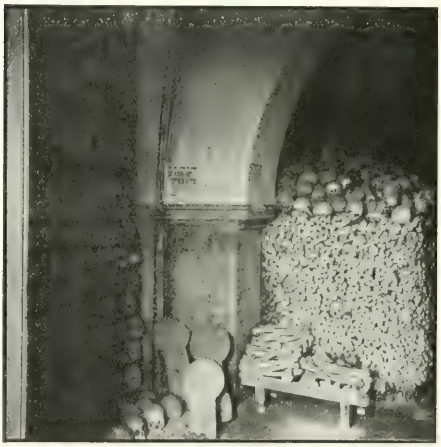
The crypt proper, however, was of large dimensions, occupying the whole of the space beneath the chancel and its chapels, as at Gloucester; sometimes it was so vast as practically to be an underground church, as in Canterbury cathedral; in Old St. Paul's, London, it went indeed by the name of St. Faith's church (5). Bishop Wilfrid brought this Italian usage to his northern diocese in the seventh century, and his two crypts at Hexham and Ripon both survive; other pre-Conquest crypts may be seen at Repton, Derbyshire; Sidbury, Devon; and Wing, Bucks.

[1] Of this character is the Gloucester Feretory, described in p. 93.



Plan of Crypt of St. Peter-in-the-East, Oxford

Norman crypts remain in Canterbury cathedral (of three dates), Rochester cathedral, Lastingham church in the North Riding of Yorkshire (82), and the cathedrals of Winchester, Worcester, Gloucester, and York[1] minster: some of these are known to have replaced Anglo-Saxon crypts; it may have been so in every instance.[2] Beneath the church of St. Peter in the East, Oxford (85, 83), is a fine Norman vaulted crypt; it is divided by two ranges of columns into three aisles, and at the *west* end is a small barrel-vaulted chamber, in which lay the body of a saint, whose very name is now forgotten; there are the original doorways of four staircases, two of which led north and south into the churchyard, and two into the church, emerging on either side of the chancel arch, as at Wing.[3] Other important parochial crypts of the twelfth century remain at Newark and St. Mary's, Warwick. At Berkswell, Warwick, is a remarkable crypt entered from the nave; with two rectangular bays beneath the chancel and one octagonal bay beneath the eastern portion of the nave.[4]



W. M. Hythe Charnel House

Sometimes the substructure was not a crypt proper, but merely built to support the east wall of the church, when it was extended on to ground sloping steeply to the east, as is the case in Madley church, Hereford.

Frequently the substructure was a charnel house or bone house. The great eastern extensions of Worcester cathedral had to be built over part of the Monks' Cemetery; Bishop William de Blois therefore had the bones taken up and removed to a charnel house, which he built for them on the north side of the nave; it still remains under the turf; the chapel above it was demolished in 1677 (133). So also at Dorchester priory the fourteenth-century parochial aisle could only be built by taking in a part of the graveyard; a low crypt therefore was built

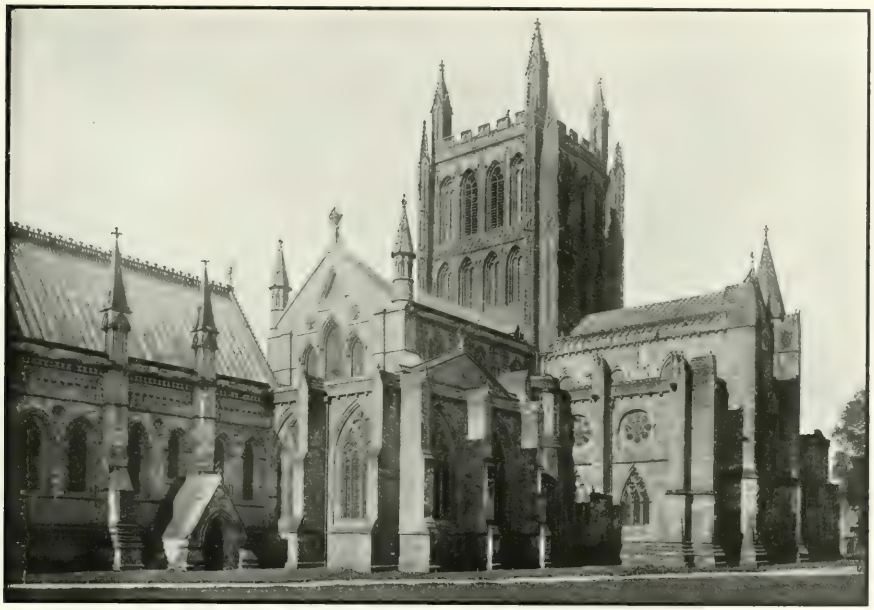
[1] At Rochester the greater part of the crypt is thirteenth-century work; the York crypt has been much altered and enlarged at later dates. There is a magnificent crypt beneath Glasgow cathedral; the earlier portions are *c.* 1180.

[2] See Baldwin Brown's *Arts in Early England*, ii. 263.

[3] This crypt, and that in Oxford castle, are described and illustrated by Mr Charles Lynam in *Archæological Journal*, lxviii. 203.

[4] For the plan and particulars of this crypt I am indebted to Mr F. T. S. Houghton.

beneath, and in this the bones were cast; the hole through which they were shovelled may still be seen here and at Mildenhall. The crypt of Hereford cathedral is styled "domus carnaria" in the epitaph of Andrew Jones (87). The charnel house of Norwich cathedral still remains, and contained an altar; there is also a chapel above; it is situated a little to the west of the cathedral. Great quantities of bones still remain in the crypt of Hythe church, Kent; of course they are reputed to be those of warriors who fell in some bygone fray. At Grantham till 1860 there



C. G. Hereford from North-east

was a vast accumulation of bones in the crypt; it retains its altar.[1] There is a multitude of bones in the crypt of Rothwell church, Northants.

Other bone houses exist at Bosham, Sussex; Heckington, Lincolnshire; Northborough, Oundle, and Higham Ferrers, Northants; Bridgwater, Somerset; Hallaton and Edmondthorpe, Leicestershire; Burford and Witney, Oxon.; Brisley, Norfolk; St. Michael's, Oxford; Marldon,

[1] At Grantham the crypt was double, the western part forming a bone house, the eastern a chapel in which might be sung masses for the dead; probably this arrangement was normal.

Devon; Norwich, St. Gregory; Tamworth, Stafford; Waltham abbey, Essex; Sandwich, St. Peter's, and Folkestone, Kent; Pakefield and Lowestoft, Suffolk; Stratford-on-Avon; and the destroyed church of St. Martin, adjoining the nave of Beverley minster. Very fine examples of ossuaries, usually above ground, are common in Brittany.[1]

Sometimes the crypt served also to provide a subterranean procession path, *e.g.*, at Hythe (86), where there are large and richly molded northern and southern doorways (84). At St. Peter Mancroft, Norwich, there is a flight of many steps between the stalls and the altar platform, which platform fills the easternmost bay. The steps are due to the existence beneath the altar platform of an archway or passage leading from one side of the church to the other. This passage was made to provide a way for the Palm Sunday and other processions which usually made a circuit of the church and cemetery; because the way round the old church had been blocked through the extension of the new church to the eastern limit of the churchyard.[2] In Wimborne minster there was originally a small chancel with a Lady chapel to the east of it. The church could not be extended eastward, as there is a high road to the east; so the Lady chapel was thrown into the chancel, and a crypt was constructed beneath, which both served as Lady Chapel and contained a procession path.[3]

THE FERETORY

In many of the Greater Gothic churches one bay of the chancel was appropriated as a Feretory or Saint's chapel. The usage grew up slowly but inevitably, and was of foreign derivation. Originally, beneath the larger Roman basilicas there lay in the catacomb the body of the saint to whom the church was dedicated. The same would be the case elsewhere where a crypt had been built in imitation of Italian usage. In France, more venerable than any churches above ground are the crypts of Jouarre, St. Germain, Auxerre, St. Victor, Marseilles, and Chartres cathedrals; nor in England have we any church older than the crypts of Hexham and Ripon. But it must have been found very early that a low, damp, noisome, badly lighted crypt was very inconvenient for the great pilgrim concourses which visited the remains of the more famous saints. Of these few enjoyed greater popularity than St. Martin of Tours. In conformity with Italian usage he had been buried in the crypt of the abbey church of Tours; but in the second half of the fifth century we are told by Gregory of Tours, "Hic submota basilica, quam prius Briccius episcopus aedificaverat super sanctum Martinum, aedificavit aliam ampliorem miro opere, in cujus absida beatum corpus venerabilis

[1] On Bone houses see Bloxam's *Gothic Architecture*, ii. 185.

[2] *Norfolk and Norwich Arch. Soc.*, xiv. 155.

[3] On the whole history of the Crypt and Confessio see Fleury's *La Messe*, Vol. ii. 79-146, and Plates cxxiii. to cxliv.

sancti transtulit;"[1] *i.e.*, "Bishop Perpetuus built a new church, to which he transferred (from the crypt) the body of St. Martin, placing it in the apse (on the ground floor)." In the Anglo-Saxon cathedral of Canterbury also, *c.* 950, there was an altar against the eastern wall of the apse, and this altar was dedicated to and was alleged by the Canterbury monks to contain the body of St. Wilfrid; this arrangement made it necessary for the High altar to be placed somewhat further to the west, instead of occupying its normal position on the chord or in the centre of the apse (30). These then are early examples of a Saint's chapel or Feretory above ground.[2] In both, however, the Feretory does not occupy what

F. R. P. S. St. Albans: Retro-choir, looking West

was to be afterwards its normal position; it was formed simply by appropriating the eastern apse of the church. In England the first existing Feretory is to be found at Canterbury. The Archbishop, Thomas Becket, had been murdered in

[1] On St. Martin de Tours see Comte Robert de Lasteyrie's paper in the *Memoires de l'academie des inscriptions et belles lettres*; tome xxxiv., part 1.

[2] A good instance of the transference of relics from a crypt to a site behind the High altar is the abbey church of St. Matthias in the western suburb of Trier, where the Romanesque crypt remains, but the relics of St. Matthias are in a shrine immediately above and at the back of the High altar. —A. H. T.

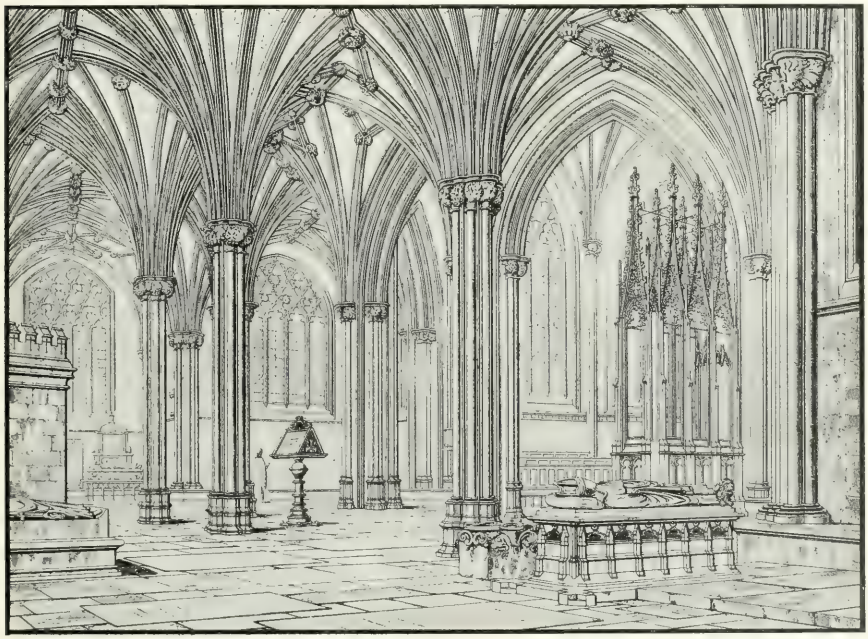
1170, and was buried in the Norman crypt. In 1174 there was a great fire, and when the chancel was rebuilt by William of Sens, he lengthened it considerably to the east, inserting east of the sanctuary a new chapel, what is now incorrectly called the Trinity chapel. The work was completed in 1184; and in 1220 the body of St. Thomas was removed from the crypt to the new chapel, in the centre of which his new shrine arose, and the chapel was known as St. Thomas chapel. Next Winchester built a Feretory for its great local saint, St. Swithun, *c.* 1207; and the example of Canterbury and Winchester was soon largely followed. Ely built a Feretory for St. Etheldreda, 1235-1252; Durham for St. Cuthbert, 1242; Westminster for St. Edward, 1245; Lincoln (137) for St. Hugh, 1255-1280; Hayles abbey for the Holy Blood, 1270; St. Albans (123), probably two chapels, one for St. Alban, one for St. Amphibalus, 1302-1308; and a few years later Lichfield for St. Chad, and Chester for St. Werburgh. At Lincoln the head of St. Hugh, detached from the body, was preserved in a separate case or reliquary, which stood upon a pedestal at the back of the High altar, probably that illustrated on p. 76. In 1364 the head-shrine was stolen by thieves, who carried away the precious case, but threw away the head in a field, where it was guarded by a crow till morning, when it was restored to the minster. The thieves were afterwards captured and hanged at Lincoln. At St. Albans (89) the shrine of St. Alban stood on the other side of the low arcaded wall, and that of St. Amphibalus probably in front of it. At Hereford the pedestal of the shrine of Bishop Cantelupe is now placed in the eastern aisle of the north transept; originally it would probably stand in the centre of the eastern transept (78). The bishop died in 1282 and was canonised in 1320; the pedestal of the shrine seems to be *c.* 1290. The great local saint at York was Archbishop William, and for him was set out, *c.* 1361, a Feretory occupying the next bay east of the presbytery.[1] Vast structural changes were rendered necessary by the addition of these Feretories.

As to the position which the Feretory of the great local saint should occupy, there could be little doubt. Of the whole church the vicinity of the High altar was the most sacred, and it was near this that the Saint's chapel was built; not in front of it, but behind. It is probable that at first the shrine in the Saint's chapel was built immediately against the back of the High altar, so that its own altar had to be east of the shrine, the celebrant thus facing west: this was certainly the position of the shrine of St. Erkenwald, fourth bishop of London, whose body was translated from the crypt of Old St. Paul's in 1148 and placed in a new shrine in 1314[2]. At St. Albans also the old shrine set up by Abbot Symeon

[1] It is shewn in the plan of York minster in Vol. i. of Browne Willis' *Survey* (1727), in which it is styled "A chapel behind the High altar called the *Sanctum Sanctorum*."

[2] It is shewn in the drawing of Hollar, reproduced on p. 54.

(1167-1183) was joined on to the High altar.[1] Old prints shew that the shrine of St. Richard at Chichester was so situated. Such a position, however, must have been ritualistically objectionable; especially as it would not be possible to pass round the shrine. So we find in 1346-1349 Thomas de la Mare, prior of Tynemouth, removing the shrine of St. Oswin, which up to then had been attached to the High altar, "altari majori connexum," and putting it in a chapel to the



J. B. Wells: Procession Path, Feretory, and Lady Chapel

east "in the place where it now stands, so that pilgrims could walk all round it and more easily and freely pay their devotions thereat."[2] It was natural therefore that it should become usual to place the shrine in the centre of the chapel, and detached, as may be seen at Westminster and St. Albans. The introduction of such

[1] See Matthew Paris in Rock's *Church of Our Fathers*, iii. 314.

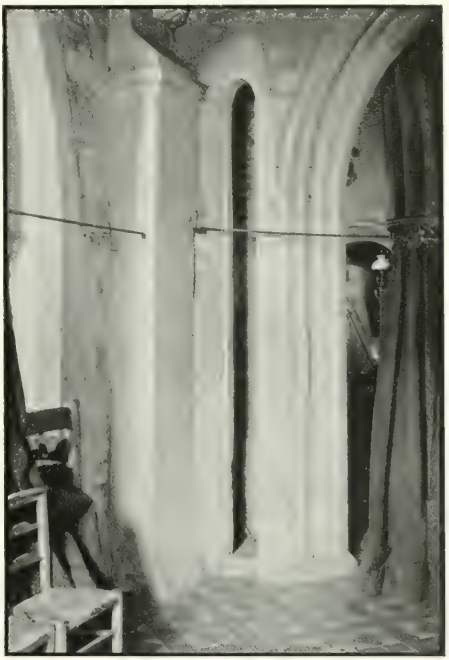
[2] See paper on the "History of the Christian Altar" by Mr Edmund Bishop in the *Downside Review*, July 1905.

a chapel was of course impossible without a most extensive remodelling and rebuilding of the eastern portion of the church; and was indeed one of the chief motives which prompted the demolition and reconstruction of the chancels of so many of the Greater churches. It is significant that churches, which never possessed the relics of a great local saint, and consequently needed no Feretory, more often retained the original planning of their chancels more or less unaltered; *e.g.*, Gloucester cathedral. To a church which had the good fortune to possess such relics the generous offerings of pilgrims brought a great accession of wealth, and much of it was naturally spent in increasing the splendour and dignity of the shrine of the great saint. And that its magnificence might not be thrown away, the shrine was placed on a lofty pedestal, and the reredos of the High altar was kept low; it was only in later days that lofty stone reredoses were erected at Christchurch, Durham, York, Westminster, Winchester, St. Albans, Milton abbey, and elsewhere, shutting out of sight the great shrine. Originally the view eastward in such a church, on passing through the choir screen, must have been exceedingly effective; with first the choir altar giving scale to the High altar, and then the High altar giving scale to the lofty shrine; such a view may still be had in the Cistercian church of Pontigny, near Auxerre, where are enshrined on high the relics of St. Edmé, *i.e.*, Edmund Rich, Archbishop of Canterbury.[1] It was not every church, however, that could afford to build a Feretory east of the High altar; sometimes, indeed, the church could not be lengthened eastward, *e.g.*, Oxford cathedral, owing to the city wall being close. In such cases room had to be found elsewhere; the Feretory of St. William of Perth was in the north choir transept at Rochester; that of St. Frideswide was probably in a northern aisle of the chancel of Oxford cathedral (80). It may be noted that the spacing of the piers of the bay east of the High altar so that the vault above forms a kind of glorified canopy or tabernacle may be indicative of an intention, carried out or not, to employ this bay as a Feretory. This is so in the beautiful crypt of Glasgow cathedral: at Wells (91) the vaulting of the bay east of the High altar seems to have been designed with similar intent to contain a shrine of Bishop William de Marchia; unfortunately two attempts to secure his canonisation were unsuccessful.

J. J. D. Barnby, Suffolk

[1] Illustrated in *Gothic Architecture in England*, 187. See Wall's *Shrines of British Saints*, 172; and Gough's *Sepulchral Monuments*, ii. 1, lxvi.

At Winchester and Gloucester are Feretories of a different character and of minor importance, each at the back of the High altar. In both the Feretory[1] is but a narrow walled space, originally containing cupboards in which were kept some of the more important treasures of the church; in fact it was the Treasury. At Gloucester there are also two large recesses extending westward under the High altar, in which no doubt relics were deposited.



J. F. E. Broadwell, Oxon.

PROCESSIONS

From the earliest days, even from the time of St. Cyril of Jerusalem,[2] who is credited with the invention of processional ritual, it was customary for the faithful to resort to places of pilgrimage, singing hymns; the procession being accompanied by a subdeacon carrying a cross. A beautiful example of these crosses, probably of the fifth century, remains in the Brescia library.[3] Another of the sixth century, still more famous, stands on the epistle side of the High altar of Ravenna cathedral. The gospels of St. Chad, written about 700 A.D., and preserved in Lichfield cathedral, have a representation of a processional cross. At first the processional cross appears without a staff, as in the mosaics of S. Vitale, Ravenna; then it has a short staff, as in Anglo-Saxon manuscripts; towards the eleventh century it is given a long shaft. Beautiful processional crosses, chiefly foreign, some of Limoges enamel, some of ivory, may be seen in the South Kensington Museum. In

[1] The term "Feretory" is used in this chapter, except in the last paragraph, as an equivalent to "Chapel of the Local Saint." This is the sense in which it is used in the *Rites of Durham*, where the enclosed platform on which stood the shrine of the local saint is styled *St. Cuthbert's feritorye*. Elsewhere, however, in the *Rites* the term is applied (1) to the portable shrine or coffin, and (2) to the coffin and the stone pedestal on which it stood, and the *cooperculum* which was let down to cover it. See Dr Fowler's notes, 196, 198, 323. [2] Died A.D. 386. [3] Illustrated in *La Messe*, v. Plate 150.

small churches the altar cross, mounted on a staff, would often be employed for the procession.

Processional ritual enjoyed very great popularity in England in village church, town church, abbey church and cathedral alike. From the very beginning of Anglo-Saxon Christianity, throughout the Middle Ages, in every village and town, processions took place on the Monday, Tuesday, and Wednesday of Ascension week, which for that reason were called Gang Days or Rogation

W. M. D. Exeter Nave: Minstrels' Gallery

Days, *i.e.*, Days of Intercession. It was on the third of the Gang days that the Venerable Bede died while the monks were passing through the fields in procession, carrying sacred relics. So dear and universal was the custom of processioning at Ascension-tide with banners and garlands and posies of the flowers of early summer, that a woman bearing posies or garlands in her hands became the stereotyped symbol of the months April and May, in one or other of which Ascension day may fall; numerous illustrations of the Gang days figure

on misericords.[1] In every church also, great and small, there was a Sunday procession. In a village church this would pass into the open air,[2] weather permitting, by the north door, and then pass along the centre of the churchyard round the east end of the church, re-entering by the south door: it may be that some churchyard paths still retain the route of the ancient Sunday procession.

It was to give exit to the Sunday procession that every church had a northern doorway to the nave, even if it had both southern and western doorways as well; in modern times the northern doorway has usually been blocked up or destroyed, to stop through draughts.[3] Near some of these northern doorways, especially on the eastern wall of the west tower, there sometimes remain tall recesses for poles of banners and the processional cross; the banner cupboard at Barnby, Suffolk, retains its original door, pierced with tracery patterns (92).

Lockers for banner staves remain in the following churches among others;[4] they are usually 7 to 12 ft. high, 12 to 18 in. wide, and about 12 in. deep.

Hereford, All Saints.
Warwick, Nuneaton.
Suffolk, Barnby, Lowestoft, Rushmere, Henstead, Shadingfield, Gisleham, Blythford, South Cove, Wrentham.
Norfolk, Strumpshaw, Norwich St. John de Sepulchre, Hessingham, Great Plumstead, Castle Rising, Cromer, South Walsham, Catfield, Palling, Waxham.
Hertfordshire, Kelshall.
Northants, Earl's Barton, Northampton St. Sepulchre, Hannington, Kingsthorpe.
Gloucester, Bristol cathedral, in the sacristy.
Yorkshire, York minster almery.
Selby, in the wooden relic cupboard (burnt).
Oxfordshire, Broadwell (93).

In St. Paul's cathedral in 1552 there were "iij longe staves usedd to carie the crosses upon in processions, all throughlye platedd with silver except one, which is not throughoughtlye platedd with silver but to the myddes onlye." In York minster was "a long staff of silver

[1] See illustration from Ripple in the writer's *Misericords*; also p. 120.

[2] There is little, if any, documentary evidence for the external procession in parish churches; indeed our knowledge of the services of our mediæval parish churches is decidedly scanty.

[3] It has long been accepted as an Article of Faith that the doorway, now usually walled up, on the north side of the nave, was built that, the door being opened, the devil might fly out of the child at baptism, or out of the church on its dedication, passing out on the north or sinister and gloomy side of the church. To one of these hypotheses all the contributors to *Notes and Queries* (9, iv. 127, 178, 218, 256, 313, 528) pledge themselves. It may be added that exorcisms took place in the porch, which was usually on the south side of the nave.

[4] In some of the Greater churches the lockers were not for banners but for the crozier of the bishop or abbot; at New College, Oxford, the crozier of the founder of the college, William of Wykeham, is still preserved in a locker on the north side of the presbytery.

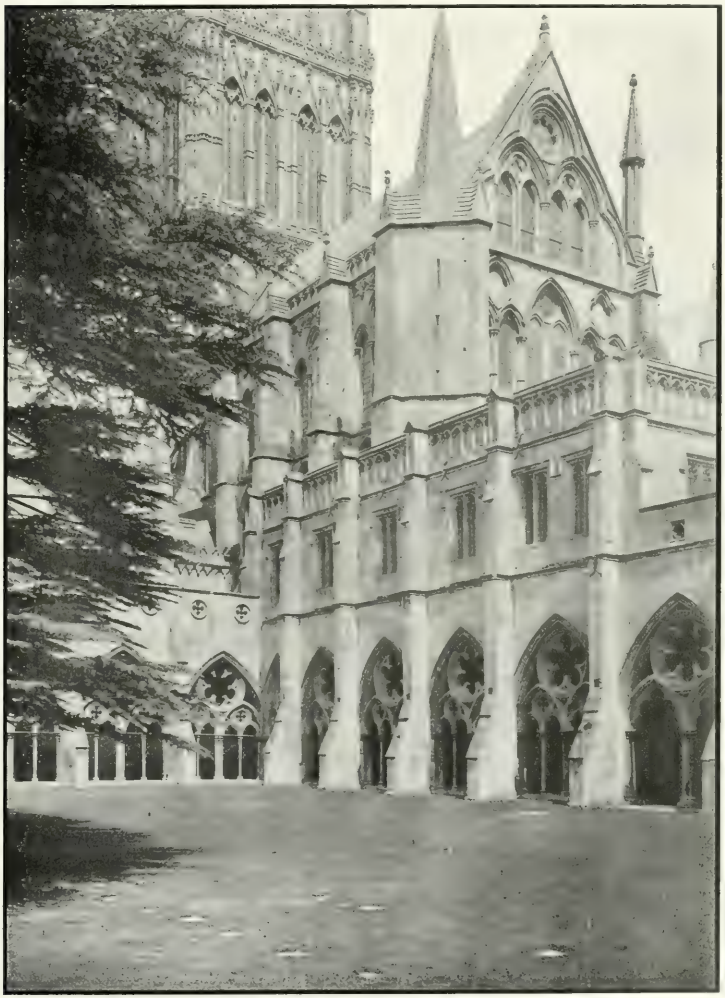
gilt for processions, offered by the executors of Master William Waltham, formerly Canon of this Church, for the good of his soul." In Winchester cathedral there were four processional staves. In the fifteenth century the richer processional crosses were miniatures of the Rood, representing the Crucifixion, Mary and John, and the symbols of the Evangelists. The chief of the four processional crosses in Lincoln minster was "of silver and gilt, with a Crucifix in the midst, Mary and John standing on two branches, and flower-de-luces in every of the four corners, with the four Evangelists graven, weighing 57 ounces; and one staff, ornate with silver, having a bowl and a socket of silver."[1] In St. Peter Mancroft, Norwich, there were nine processional banners. In 1596 there were still in St. Ewen's church, Bristol, "iii banner staves and iii banners." At Dowsby, Lincolnshire, the Churchwardens report "Item, banner pooles and crose staves made away with."

In the Greater churches the Sunday procession was part of the group of services which occupied Sunday morning,[2] viz., the Benedictio Aquæ, Tierce, Sunday procession, and High Mass; minute descriptions of the ceremonial are given in the *Sarum Processionale* and the Cistercian *Consuetudines*. In Salisbury cathedral, a church served by Secular Canons, the ceremonial was as follows. First, the priest who was afterwards to celebrate at High Mass, standing at the altar steps, hallowed the water and salt and mixed them together; then he went up to and round the High altar, aspersing it from all sides. Then he aspersed his attendants. Then the clergy came up, the highest in rank first, and were aspersed; also any laity who were in the chancel. While this was going on, the office of Tierce or Undernsong was sung by the choir. Then the procession set forth; first the vergers, then boys carrying small buckets of the hallowed water, then the cross-bearer, then two taper-bearers abreast, then the Thurifer with his censer of incense, then the subdeacon, the deacon and the celebrant, then the canons of the cathedral and others in double file. The procession always left the choir by its north door, and marched along the ambulatory all round the chancel, making a station at each altar and singing anthems, while the celebrant aspersed the altar. After passing round the chancel, the procession would pass into the transepts, hallowing the altars there, and then down the south aisle of the nave as far as the west door. Next turning to the right again, it passed to the font in the centre of the western bays of the nave; then it passed up the nave, and while the celebrant aspersed the altar at the foot of the Choir screen, commonly known as the Fabric altar, the principal station was made.[3]

[1] A beautiful processional cross of the fourteenth century, very similar to the Lincoln one, remains at Lamport, Northants.—A. H. T.

[2] Except on Palm Sunday and when Sunday coincided with a double feast, when the arrangements were different.

[3] At Fountains abbey beneath the turf are two rows of stones placed down the centre of the nave to mark the spot where each monk should stand; a similar arrangement is known to have existed at York and Lincoln minsters. John Bokeland in 1473 directed that he was to be buried in Stone church near



F. S. Salisbury: South Transept from Cloister

Here was said the Bidding prayer (which may still be heard at Oxford and Cambridge before the University sermons), in which the faithful were bidden to pray for the Church, the King, the Archbishops and Bishops, for the Bishop of the Diocese and the Dean of the Cathedral, for the winning from the Paynim of the Holy Land, for peace, for the Queen and her children, for those who had departed this life in God's faith and fear, and in particular for all benefactors of the Cathedral; this also was the station for the prayers for the dead. Then two files passed through the two doorways of the Rood screen, if it was a church of monks or canons regular, and then through the central doorway of the Choir screen; finally, entering the choir, they returned to their stalls, and High Mass began. The Sunday procession in a Cistercian monastery was similar, except that not only the church but the buildings round the cloister, *e.g.*, the chapter house, dormitory, refectory, kitchen, were also aspersed, and that the doorway by which the procession re-entered the church might be situated not at the end of the west walk of the cloister, but in or west of the cellarer's block; *e.g.*, at Fountains Abbey (127). The directions given in the *Nomasticon Cisterciense* (Solesme, 1892) may be compared with those of the *Sarum Processionale*: "Interim minister recipiat aquam in quolibet vase de arceolo in quo est aqua benedicta; et habens sparsorium aliud, claustrum aspergat et officinas; scilicet capitulum, auditorium, dormitorium et dormitorii necessaria, refectorium, coquinam, cellarium."

On certain of the greater festivals the processional ritual was still more elaborate; *e.g.*, at Easter, Christmas, Ascension Day, Palm Sunday, Corpus Christi. On such high days the procession passed outside of the church, and if the church had cloisters,[1] it passed round these. At Salisbury the procession left the choir after midday song or Sext, all the upper canons wearing copes, and passed out through the western doorway of the choir beneath the Choir screen; then it entered the north transept and passed successively through the northern choir aisle, the eastern aisle or *via processionum*, and the southern choir aisle; then it passed through the south transept into the cloister and successively through the eastern, southern, and western walks of the cloister back into the church, entering the nave by the western of the two procession doorways which led from the cloister to the south aisle of the nave (130).

Greenhithe, and that his executors should pave with tiles the procession way from the chancel door unto the west door. At Canterbury, Chichester and Wells lines were incised in the pavement. In *Transactions of St. Paul's Ecclesiological Society*, vi. 197, Mr Aymer Vallance reproduces plans shewing the ancient procession slabs of the naves of York and Lincoln; see also his papers in *Memorials of Old Kent*, 78, and *Memorials of Old Derbyshire*, 201.

[1] In a church served by Monks or Regular Canons a quadrangular cloister was indispensable; in churches served by Secular Canons it was not necessary; nevertheless it was sometimes added to shelter out-of-door processions. This explains why in some churches of Secular Canons, when a cloister was added, the walk adjacent to the nave was omitted, the other three walks being enough for processional purposes; *e.g.*, Wells and Chichester: at Salisbury (130) and Lincoln (137) all four walks were built; in place of the northern walk of the latter there now stands Sir Christopher Wren's Library (101).

On Palm Sunday it was usual, *e.g.*, at Canterbury, to put up a gorgeous tent in the precincts and to carry to it an open shrine-like canopy from which was suspended the Blessed Sacrament; at this the principal station was made; when the procession reached the church again, the doors were found to be closed, and a choir within the closed doors sang the hymn *Gloria, laus et honor*, while outside the singers in the procession took up the refrain *Ingrediente Domino in sanctam civitatem, Hebraeorum pueri resurrectionem vitae pronuntiantes*, etc.[1] Then at last the doors were thrown open; the canopy was lifted high at the doorway, and all the procession passed in, bowing as they passed beneath the Blessed Sacrament. In a parish church a station was made at the churchyard cross, which was decked with palms.[2] In the Greater churches there were many other processions beside these. Every day in Easter week there was a procession to the font to cense it with incense, a station being made beside it. Every day at Salisbury, after Lauds, a procession was formed and marched round the church, and afterwards into the cemetery, where prayers were said and psalms were sung for the souls of those whose bodies there lay buried. In Lent, on Wednesdays and Fridays, a penitential procession passed round the inside of the church. Then there were great days when the relics of the local saint were carried in procession, sometimes in intercession for the crops. At York the relics of its Archbishop, St. William, were contained in a portable shrine; at Durham there was a portable shrine, "wherin the bones of the holie man Saint Beede was inshrined, being accustomed to be taiken downe every festival daie, when there was any solempne Procession, and carried with iiij Monnckes in tyme of Procession." Frequently, however, the shrine of the saint was clamped to or embedded in its pedestal, *e.g.*, that of the Confessor at Westminster; in this case it would be necessary for processional purposes to have a portable shrine of other relics, or perhaps more than one. Without going further, it is clear that processions held a high place from the earliest days in the ritual of the Church of England; and that the requirements of processional ritual had to be carefully studied in the planning of the Greater churches. This comes out in many ways; *e.g.*, in the disposition of the doorways north, south, and west of the choir; and again, of the eastern and western doorways in the aisle of a church adjacent to a cloister; (sometimes the former doorway was round the corner in the transept; in Milton abbey, which never got its nave built, these two doorways are in the north aisle of the chancel); and in the arrangement of the screen doorways, two in a Rood screen (37), one in a Choir screen (40).[3]

[1] See Henderson's *Sarum Processional*; and the notes relating to the York use in the new edition of Rock's *Church of Our Fathers*.

[2] On parochial processions see T. North's *St. Martin, Leicester*, p. 70.

[3] The Minstrels' galleries at Winchester and Exeter (94) in the western part of the nave may also have been intended to hold a half choir on Palm Sunday; so also the so-called Abbot's pew at Westminster.

Of the procession route the most important portion was that which encircled the chancel, having on its outer side the eastern chapels with their altars and reliquaries. At first many great churches did not possess such a path; but with one exception, that of Rochester cathedral, all the cathedrals and nearly all the larger monastic and collegiate churches ultimately provided themselves with a procession path.[1] It is not too much to say that the possession of a perfected procession path is the mark of marks which distinguishes a church of the first rank from one of the second. Such a procession path, however, could not be regarded as satisfactory if altars were placed in it. Altars needed screens in front of them for protection; and screened altars in a procession aisle must have been exceedingly inconvenient; how they were avoided or not avoided may be well seen by comparing the plans of Worcester cathedral (133) and Bristol cathedral.[2] It is the restriction of the aisles of the Greater churches in the main to processional ritual which kept them narrow; in such churches they are rarely more than half the width of the nave; in the later parish churches congregational uses were devised for aisles, and they were widened again and again, till they became almost as wide as the nave, or even wider; witness the broad aisles of the parish church of Great Yarmouth, and of the parochial nave of Wymondham abbey church. In the Greater churches the aisles were primarily nothing but gangways or passages, and were kept clear of obstructions;[3] in the nave at least one aisle had to be kept clear; in transepts the aisles served as chapels or sacristies.[4]

[1] The term "procession path," as also the terms "ambulatory" or "deambulatory," is ambiguous. It may apply to the aisles north, east, and west of a chancel; or it may be restricted to the eastern aisle. It is here used in the narrower sense, following the precedent of William of Worcester. When referring to the northern and southern portions of the encircling aisle, it is more convenient to speak of the "northern" or "southern aisles of the chancel."

[2] At Bristol cathedral there was an altar at the east end of each choir aisle; of the northern one the platform and much of the reredos remains; this platform, two steps high, so greatly blocked the procession path that its south-western corner was cut away. Soon after the Suppression the corner of the platform was filled in again that a tomb might be placed on it, which is still there: but beneath the tomb the chamfered corner is plainly visible. See the plan (139) and the section (414) of Bristol cathedral.

[3] Not always, however; in Durham nave two bays in the south aisle were screened off as a chapel for the Neviles.

[4] On processions, processional ritual, processional crosses, banners, and lockers see *Processionale ad usum Sarum*, Leeds, 1882, pp. 42-54; Canon Wordsworth's *Salisbury*; Bradshaw and Wordsworth's *Lincoln Cathedral Statutes*, i. 374-376; Cistercian *Consuetudines*; Martène's *De Ritibus Ecclesiæ*, Vol. iv.; *Injunctions of Processions by Edward IV.*, year 1547; Rock's *Church of our Fathers*, iv. 210, 262, 265; also iv. 81; *Hierurgia Anglicana*, i. 224-228; Walcott's *Sacred Archæology*, 474 *seq.*, and *Traditions*, 74, 76; Pugin's *Glossary*, 91; Dr Fowler's edition of *Rites of Durham*, Surtees Society; Canon Church's *Chapters in the Early History of Wells*; Rev. C. R. Manning on "Lockers for the Processional Cross," in *Archæological Journal*, xlii. 435; Bishop Hobhouse's *Churchwardens' Accounts of Somerset Churches*; Gasquet's *Parish Life in Mediæval England*, 132, 171, 184, 185, 269; Cox and Harvey's *English Church Furniture*, 317-319.

S. S. Lincoln Minster: Cloister

INTRAMURAL BURIAL AND OBITS: CHANTRIES AND CHANTRY CHAPELS

Burial within the walls of the churches appears, at any rate in England, not to have been usual in early days. At Winchester in the ninth century St. Swithun was buried at the entrance of the church, "where passers by might tread on his grave and the rain from the eaves might fall upon it." Burial in the church porch was a custom which lingered long; as may be seen in the directions given in numerous wills. In later days burial within the church became increasingly common. And when the deceased was a man of wealth and influence, a monument was erected over his grave; and, in the case of the more costly monuments, was protected by metal palisades and grates, as in Tanfield church, Yorkshire, the Beauchamp chapel, Warwick, and Henry VII.'s chapel, Westminster,[1] or, more usually, by open screenwork of stone.

As time went on, intramural burial became more and more common; the chief exception was Durham cathedral, which was regarded as so sacred that Antony Bek (*ob.* 1311) was "the first Bushop that ever attempted to be buried in the abbay church and to lye so neare the sacred shrine of Sancte Cuthbert, ye wall beinge broken downe att ye end of ye Alley to bringe hym in with his Coffin. And ye first Layman yt ever had any lycense to be buried within ye said Church was Raphe Lord Nevile" (*ob.* 1367).[2] Most of these interments took place within the walls of the existing church;[3] but where space could not be found for them, additional chapels had to be built on to the church; *e.g.*, those of the Constables of Wallingford castle and others, on the south side of the chancel of Dorchester Priory church, *c.* 1300–*c.* 1350.

A still more important factor in the multiplication of enclosed monuments inside the churches was the desire that masses of Requiem should be said for the repose of the soul of the deceased.[4] On the Continent, where chantry chapels were never developed to so large an extent as in England, it was this motive only which led to their erection, for the French chantry chapels do not contain tombs.[5] In mediæval England, however poor a man died, a mass was said for

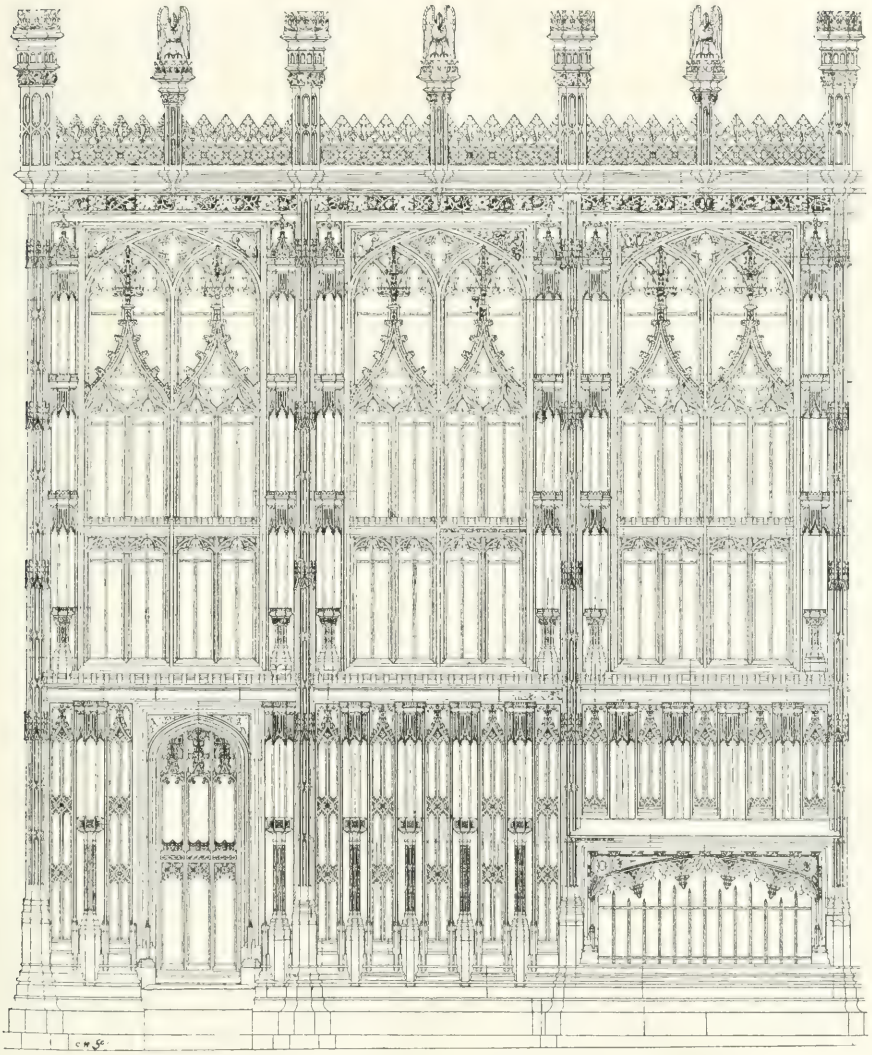
[1] Also in the middle of the chancel of Bunbury church, Cheshire; where is interred Sir Hugh Calveley, founder of the chantry college.—A. H. T.

[2] *Rites of Durham*, 244.

[3] At Durham the Nevile chapel in the south aisle of the nave occupied the whole of the second and third bays from the east.

[4] The phrase "for all the faithful dead" occurs in the foundation licences of nearly every chantry.

[5] By exception the Black Prince is buried in the choir of Canterbury cathedral, but his chantry chapel is down in the crypt. At Hereford Bishop Stanbury is buried in the aisle opposite the entrance to his chantry chapel. Another example of a chantry chapel without a tomb is that at Kingston-on-Soar, Notts. (early sixteenth century), built by one of the Babington family; it probably was intended to contain a tomb, which never was made.

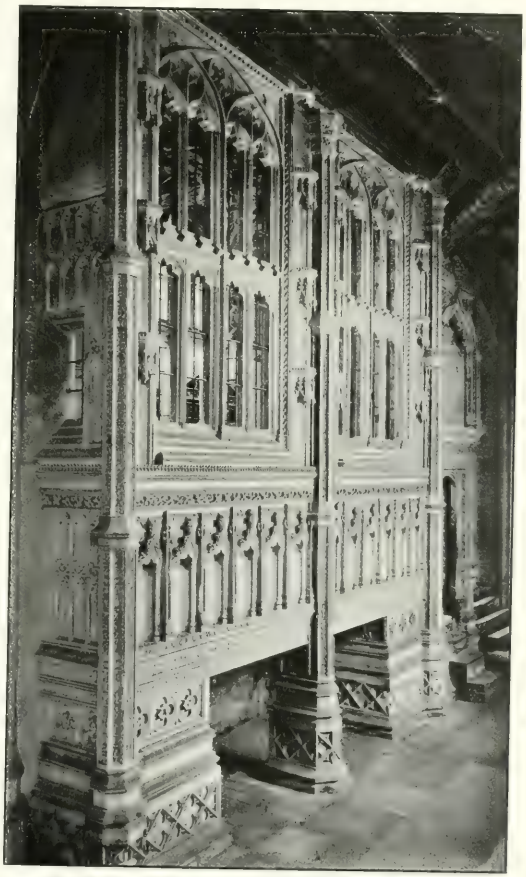


T. A. S. Winchester Cathedral: Bishop Fox's Chapel

him by the parish priest. A man of some substance would leave means for masses to be said on the first, third, seventh, and thirtieth day after his death, as well as annually on the anniversary of his death. Or he would join a guild, which would ensure the due performance of the obits for him. Thus at Louth there was a guild of St. Mary, which "found a chaplain to celebrate Mass every day in honour of the Blessed Mary, both for the brethren and sisters of the same gild and for their souls after their departure from this light, and for the souls of their parents and friends *and of all the faithful dead.*" Nicholas of Huggate, provost of Beverley, left £200 in 1338 for the payment of sixty chaplains to celebrate mass continuously for his soul for a year following his death, and *to say the office of the dead* daily. In 1369, William of Leven, rector of Lockington, Yorks., left £21 for fifty masses to be said daily for fifty days after his burial, with further elaborate directions for frequent trentals. A wealthy man might have a trental of masses; *i.e.*, masses said daily for the first thirty days after his death; as well as an annual obit. This annual mass he might instruct should be said for one, two, ten, twenty or some limited number of years. But many were able to afford such a sum as would secure that masses should be said for the repose of their souls for ever: thus providing what is called a perpetual chantry; at the Suppression there were about two thousand such chantries in England. As a rule, such masses were not said by the priests of the church, but by priests specially appointed for the purpose. The salary of a chantry priest was usually £5, say £75 of our money, in addition to lodging. The latter sometimes consisted of a couple of rooms built on to the church; several of these survive, *e.g.*, at Wingfield, Suffolk (221). Irthlingborough, Northants, is probably the most remarkable example of a Chantry house attached to a church. At Terrington St. John, Norfolk, which was a chapel of Terrington St. Clement, is a three-storied chantry house interposed between the west tower and the nave (222). In more important foundations the chantry priests might dwell together in a house of their own in the precincts, such as that which was built for the five priests of the Burgersh chantry, and that for the priests of the Cantilupe chantry, both of which remain at Lincoln; the best example of a chantry house is Sir William's college at York.

The normal duty of a chantry priest was to say mass and certain other services daily at an altar near the tomb of the founder of the chantry. The will of the testator usually left specific directions as to the prayers that were to be said. Thus at Louth in a charter founding a chantry, dated 1317, Canon Thomas Louth says: "As the Christian ponders the course of this life of exile . . . without doubt he ought . . . specially to make intercession that the Son of the eternal Father, Our Lord Jesus Christ, . . . being reconciled by the oblation of the propitiatory sacrifice on the altar and by other offerings of prayers, may remember his most tender mercy, and may out of his abundant bounty freely grant pardon and everlasting rest. . . . Wherefore I by these presents make known that I, for the salvation of

my soul and of the souls of William my father and Margaret my mother, of my brothers, and all my benefactors, and of all the faithful dead, and *for the increase of divine worship*, have confirmed the following messuages and rents . . . for the sustenance of William of Tetford, priest, and his successors, to celebrate divine service every day for ever for me and the souls aforesaid at the altar of the Holy Trinity in the chapel of the Blessed Mary of Louth; and shall moreover celebrate a Mass for me and the souls aforesaid every day except on Fridays, when he shall celebrate the Mass of the Cross in honour of the Five Wounds of Jesus Christ, and on Saturdays when he shall celebrate the Mass of the glorious Virgin in honour of her Five Joys; and on the feasts of Christmas, Easter, Pentecost and All Saints, when he shall celebrate the Masses of those days."[1] Perpetual chantries were habitually founded by bequests of land made under royal licence and the licence of the immediate lord of the fee, according to the provisions of the Statute of Mortmain; land thus alienated became the freehold of the chantry priest. An example is the licence granted to John Louth by Edward IV. "Know ye that we have given licence to the executors of the will of John Louth to found, create and establish a chantry, lately erected by the said John Louth, of one chaplain who shall every day at the altar in the chapel of



H. E. M. Christchurch: Salisbury Chapel

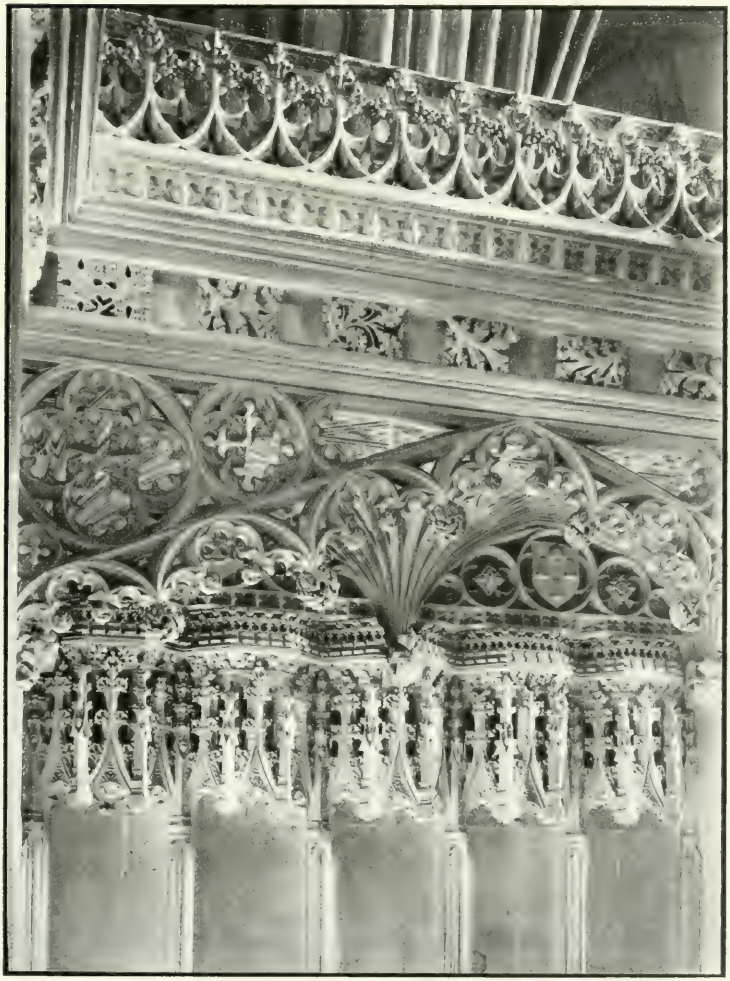
[1] *Louth Records*: edited by R. W. Goulding, Louth, 1891.

the Holy Trinity and All Saints on the north side of the Parish Church of S. James of Louth celebrate divine service for the healthy estate of us while we live and for our soul when we shall have departed from this light, and for the soul of the most dear prince our father, Richard late Duke of York deceased; likewise for the souls of the said John Louth, of Simon Louth and Alice his parents, and also for the souls of Richard Argum, and for the souls of all the faithful departed, to be called John Louthes Chauntrie."[1] But as these functions still left the chantry priest a considerable amount of leisure, it was common to utilise his services for other purposes. Thus Canon Thomas Louth directs that his chantry priest shall on all Sundays and greater feasts "be present in his own person as well at the singing of first as of second vespers and matins in the mother church of Louth" (St. James's church) "singing if the service happens to be choral ('pricksong') and affording his own help and heartiness to those who are singing." So at Louth the chief town church might have present at its daily services all the chantry priests not only of St. James's, but of the other two churches also; and instead of plainsong, the service might be choral, and might make some approach to the dignity of a service in a collegiate, monastic, or cathedral church.

In some of the Greater churches chantries were very numerous; in Lichfield cathedral there are said to have been eighty-seven;[2] and with each of them repeating his due services daily, there must have been each day a prodigious number of services, many of them going on simultaneously; special arrangements indeed had to be made that the chantry services should not interrupt the mass at the High altar. In the parish churches also, especially in the large town churches, there were often chantries; in the city churches of York there were altogether forty-two; where this was so, the result was the provision of a very large number of additional services which were open to the laity at large; Canon Thomas Louth indeed specially mentions that one of the objects of his chantry was "for the increase of divine worship." Sometimes the chantry priest was directed to give assistance to the parish priest in hearing confessions or in bearing the viaticum to the sick. In such a case the parish priest had the advantage of a large staff of curates; unlike modern curates, however, in that each had an independent status and separate endowment and a freehold for life, which the rector or vicar could not interfere with. People starting off early in the morning for a long day's travel liked to hear mass first; so it was not unusual for a testator to direct that his chantry priest should say what was called "Morrow Mass" at 4, 5, or 6 A.M.; at St. Peter Cheap, London, the "morrow mass" priest said

[1] Chantry priests who held their chantries as benefices by institution are to be distinguished from stipendiary priests receiving an income from feoffees of land, which could be diverted to other purposes at pleasure.—A. H. T.

[2] It is likely that not more than half this number were *perpetual* chantries.



F. R. P. S. Wells : Sugar's Chantry Chapel

mass daily at 6 A.M. all the year round: the churchwardens' accounts have an "Item, paid to the morrow mass priest for his wages for one whole year, £6. 13s. 4d." Or the choir was inefficient, and the chantry priest might be directed to act as choirmaster, or even as schoolmaster generally; the boys of course to attend some of the services with their master; thus in 1514 the Earl of Derby founded a chantry in Blackburn church and directed that the chantry priest "shall keep continually a free grammar school; and every Saturday and holiday he shall sing the Mass of Our Lady to note; and every quarter day he and his scholars shall sing a solemn dirge for the souls aforesaid." In the vast moorland parishes of North Yorkshire, such as Halifax and Helmsley, the inhabitants of the remote hamlets were provided with chapels of their own, and chantry priests were sometimes directed to take the services.[1] So that when all chantry endowments were at last confiscated, it was not an unmixed blessing; the parson lost his curates; services had to be greatly curtailed in number and dignity; choristers lost their choirmaster and the grammar school boys their master,[2] the hamlets lost their chaplains; nobody was the better for it except Edward VI., and he not for long; for the money was absorbed almost at once in fighting or preparing to fight in Scotland and France, except what went into the pockets of Protector Somerset and his friends.

The earliest recorded chantries are those founded by Bishop Hugh of Wells in Lincoln minster (A.D. 1235); and Bishop Stavenby in Lichfield cathedral (A.D. 1238); the latter included, among those for whom intercession should be made, his friend Robert Grosseteste, Bishop of Lincoln. Few chantries, however, were founded till the fourteenth, and the bulk of them not till the fifteenth century. A prudent man looked after the erection of his tomb and chantry chapel himself, and did not leave it to executors, who indeed were not always to be trusted; there is many a brass and monument placed in position by a man in his lifetime with nothing remaining to add but the date of the testator's death, which his executors have not troubled to insert. So Thomas Beckington, Bishop of Wells, thirteen years before his death built himself a chantry chapel, and said mass in full pontificals for his own soul, for the souls of his parents and all the faithful departed, in the presence of a vast congregation.[3] At times, however, the prudence of the testator defeated itself. Edmund Audley was Bishop of Hereford from 1492 to 1502, and built himself a two-story chantry chapel on the south side of

[1] Other examples of parishes with several chapelries are Northallerton, Aysgarth, and Burnsall in Yorkshire, and Whalley and Rochdale in Lancashire.—A. H. T.

[2] A very large number of schools seem to have been taught by chantry priests either in accordance with the deed of foundation of the chantry or by custom. A large majority of the "King Edward the Sixth" and later Grammar schools in the neighbourhood of Birmingham are in their origin Chantry Schools.—F. T. S. H.

[3] His tomb remains *in situ*; the canopy, one of the finest works of our later Gothic, has been torn down and removed to the transept; nothing is sacred to a sapper or a dean.

the Lady chapel: unfortunately he was translated to Salisbury in 1502 and had to build himself a second chantry chapel in that cathedral.

As may be seen in the chantry deeds quoted above the simplest form of chantry endowment was that which directed masses of Requiem to be said at some existing altar in the church. Where, however, the founder of the chantry was buried in the church, it was common to construct a "table-tomb" with a flat slab, without an effigy, but to which might be affixed a brass, and this slab was used as an altar slab; or perhaps a small portable altar slab (*super-altar*) was placed on it at mass; room also was left for the priest to stand at the foot of the monument; such are the monuments in Westminster abbey of Chaucer in the south transept and of Sir Thomas Vaughan in the chapel of St. John Baptist (55). Similar is the arrangement of the tomb of William Wykeham in Winchester cathedral; but here and round the tombs of Edington, Beaufort, Fox, and Gardiner there are lofty enclosures of stone screenwork: thus creating a genuine chapel; another grand set of such chantry chapels remains at Tewkesbury, and very many others at Exeter and elsewhere; great numbers have been demolished. A further development is seen in the chantry chapels of Fox and Gardiner at Winchester, where the east end of the chapel is walled off to serve as a vestry (103). Henry VII.'s chapel at Westminster is sometimes termed his chantry chapel; really, however, it is a Lady chapel, and was intended to have an altar of the Blessed Virgin;[1] the chantry chapel proper is the space contained within the metal grille, where a separate altar, that of St. Saviour, had to be provided, as the slab of the monument is occupied by the effigies of the king and queen; there was no room in the enclosure for a sacristy, which occupies a small recess near the entrance to Queen Elizabeth's chapel.

These chantry tombs and chantry chapels occupied all sorts of sites in the Greater churches. The favourite position was that of the five Winchester chapels, under one of the arches of a pier-arcade and extending from pier to pier. Sometimes, however, they project through the outer walls, altering the ground plan of the church.[2] At Ely, Bishop West prolonged the easternmost bay of the south aisle of the chancel, and appropriated it as a chantry chapel. At Tynemouth the Percies built a chantry chapel at the extreme east of the church, in the normal position of a Lady chapel; this was about 1450. At Salisbury, chantry chapels, now demolished, were built by the Hungerfords and Beauchamps, flanking the Lady chapel (131). At Lincoln chantry chapels were inserted between the buttresses of the retro-choir by Bishops Fleming, Russell (111), and Langland.[3] A chantry chapel is sometimes two stories high; the upper story of the Audley

[1] See the writer's *Westminster Abbey*, 148.

[2] In Warwickshire there are several cases, *e.g.*, Sutton near Brailes, in which a sort of bay window is thrown out on the north or south side of the church as if to accommodate a chantry altar.—F. T. S. H.

[3] Bishop Fox's chapel is *c.* 1518; Bishop Russell's *c.* 1494; Treasurer Sugar's *c.* 1484; the Countess of Salisbury's *c.* 1520.

chantry chapel at Hereford and that of Abbot Islip at Westminster were probably intended to accommodate a band to accompany the choral services of Our Lady or else the Jesus Mass; at Westminster the upper story of the chantry chapel of Henry V. contained an altar dedicated to the Annunciation, and served as a relic chamber and probably also as a watching loft. In Oxford cathedral is a stone monument above which is a chamber in oak; the latter probably served as chantry chapel and watching loft to the adjacent shrine of St. Frideswide (81). At Burford, Oxon., is a wooden chantry chapel at the east end of the nave; a somewhat similar one, but of stone, occupies the north-west corner of the chancel of Tanfield, Yorkshire. Sometimes the whole church was in a large measure a chantry chapel; thus Lord Treasurer Cromwell, who rebuilt Tattershall church, Lincolnshire, in 1457 directed that three thousand masses should be said and that a College founded by him in perpetuity should daily continue the observance for the repose of his soul; from a similar point of view we may regard the foundation of the great abbey churches of Chester and Tewkesbury. The former,[1] now a cathedral, was to a large extent the chantry chapel of Hugh Lupus; the latter may be regarded as the chantry chapel of Fitz Hamon, who founded it in 1087; it was not till 1397 that a separate chantry chapel of the founder was built in it by Abbot Parker (112).[2]

In 1529 Parliament made it illegal to charge for masses of Requiem. In 1545 the incomes of chantries were confiscated. The Act of 37 Henry VIII., however, applied merely to chantries which paid tenths and first-fruits, and (according to Henry himself) was not intended as a measure of permanent confiscation; the preamble contains no objection to chantries as such. Very few chantries were surrendered under this Act.[3] On the other hand the preamble of the Act of 1 Edward VI. is couched in distinctly Protestant terms; it confiscated the whole of the chantry endowments, which were to be applied to education and the relief of the poor; only a small part went to the re-foundation of schools, the so-called "King Edward VI.'s grammar schools."[4] The most important chantry chapel built in the reign of Queen Mary was that of Bishop Gardiner in Winchester cathedral; after her death the chantry chapel passed away for ever from the English Church.

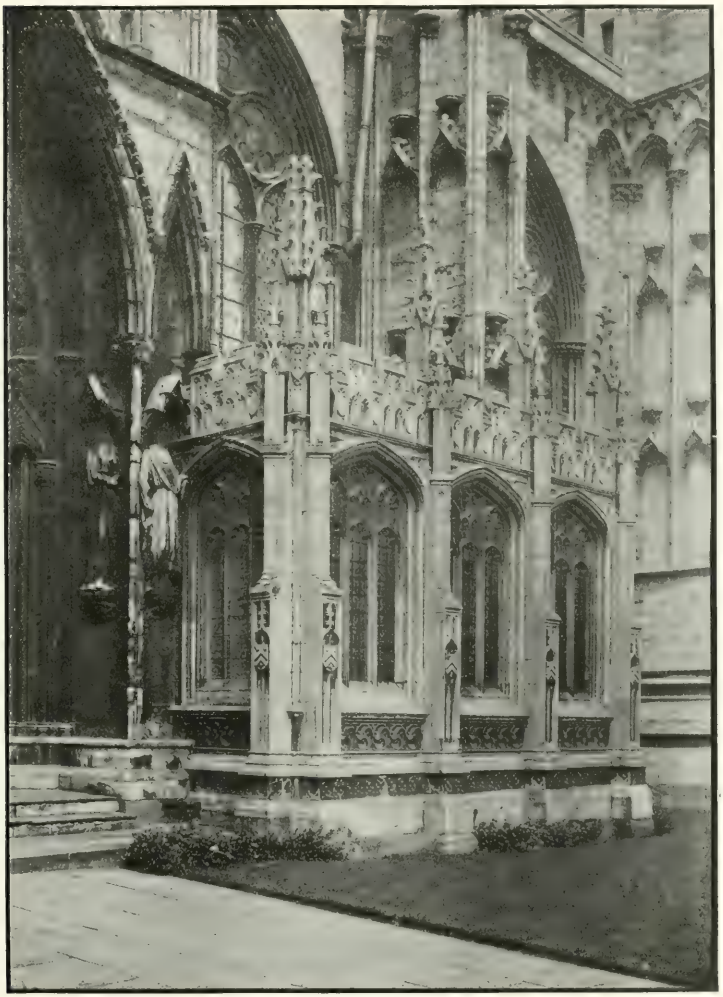
We have now passed in review the requirements of a church of the first

[1] On the subject of Chantry chapels see Rock's *Church of our Fathers*, iii. 84-113; Cutts' *Parish Priests*, London, 1898; and "English Chantry Chapels," by Paul Biver and F. E. Howard, in *Bulletin Monumental*, 1908.

[2] In the illustration the chantry chapels from left to right are those of Richard Beauchamp, Earl of Worcester, slain in 1421 at the siege of Meaux; the Founder's chantry chapel; and that of Sir Hugh Despenser, who died in 1349.

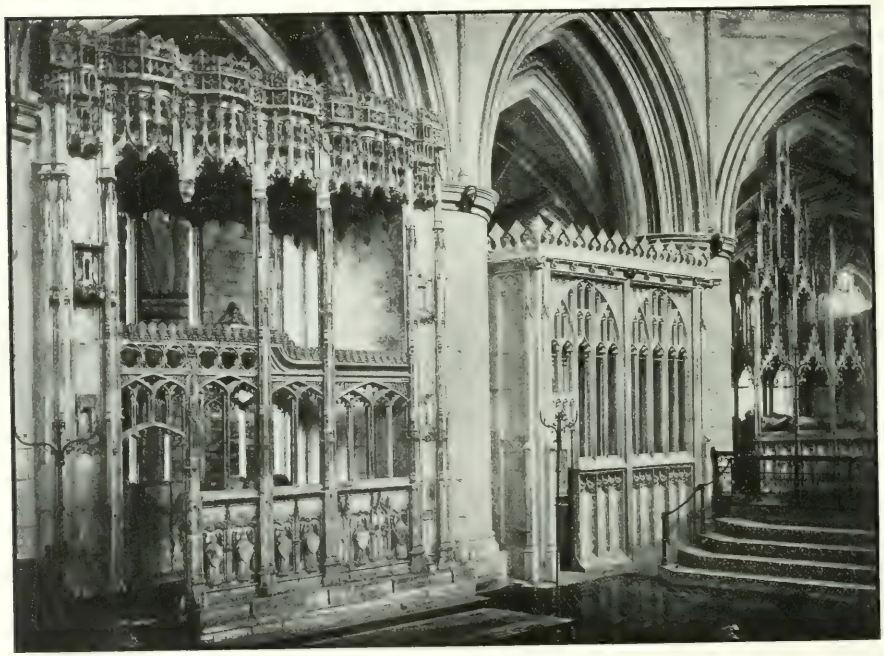
[3] When Henry died in 1546 his will provided for masses of requiem to be said in St. George's, Windsor, where he was buried.

[4] Rymer's *Fœdera*, Vols. xiv., xv., contains a number of surrenders of chantry colleges; also of a few prior to 1545.—A. H. T.



S. S. Lincoln: Bishop Russell's Chapel

rank in the Middle Ages; a double sanctuary, a stalled choir, a parochial or semi-parochial nave, a host of altars and reliquaries, numerous chapels, a pilgrim route, provision of tombs and chantry chapels underground and above ground, a feretory, a procession path; all these had to be provided, and all had to be placed under a single roof, no easy task even where, as at Lincoln, the roof covers two acres. Moreover those parts which had ritual connection had to be placed near together, and others kept apart; one part had to be planned for



W. G. B. Tewkesbury: South Presbytery

the admission of laymen, and another for their exclusion; privacy and seclusion had to be secured for the services of the monks or canons; yet their special part of the church had to be arranged so that its treasures could be exhibited with safety to pilgrims. A solution, more than one solution, was found of the problem of planning for such diverse and conflicting requirements, but the way had to be traversed for a thousand years before final success was obtained, and out of the Roman basilica was evolved the perfected plan of the Greater mediæval church.

CHAPTER III

THE PLANNING OF CHURCHES OF MONKS AND CANONS

A. CHURCHES WITH APSIDAL CHEVETS

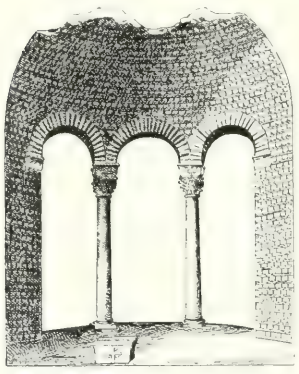
I. THE PERIAPSIDAL CHEVET

SO far the process of evolution has been fairly straightforward; the lengthening of the sanctuary, the provision of a choir for the clergy, of central, western, and eastern transepts for altars, and of a feretory for the great local saint, were worked out on comparatively simple lines. What remained was *the provision first of a procession path and pilgrim route round the chancel, and secondly of eastern chapels; both of which had to be combined with good lighting and with the ritualistic requirement that the altars in the chapels should be placed due north and south.* This gave the English builders a world of trouble. Two different solutions of the problem were arrived at; the first was ultimately abandoned in England, but remained to the last days of Gothic architecture the normal plan of the Greater churches of France; the other is wholly and exclusively English: we may speak of them respectively as the French and English methods of planning the eastern portions of the chancels of the Greater churches.

I. First as to the French plan. The early basilicas of Rome and Ravenna all terminated to the east in a semicircular apse; so also did the vast majority of the Greater Romanesque churches of England and the Continent. In Gothic days the semicircular apse was given up for the polygonal form, because when it opened into an aisle by arches, the arches were on the curve, and such arches are difficult to construct. Round the apse in churches with the French plan ran an aisle or ambulatory, the eastern portion of which is spoken of by William of Worcester as the "procession aisle"; "spacium sive *via processionum* a retro altaris principalis coram capellam Sanctae Mariae"; *i.e.*, "the part of the ambulatory or chancel-aisles which was east of the High altar, and west of the Lady chapel." From this ambulatory, which as it passed round a semicircular or polygonal apse was itself semicircular or polygonal to the east, low chapels radiated: at first there were but three, to the north-east, east, and south-east; of these the eastern one would most often be appropriated as Lady chapel. The best example in England

of this plan is Westminster abbey, which, however, as set out in 1245, had a shorter and much narrower Lady chapel than that substituted for it by Henry VII.[1]

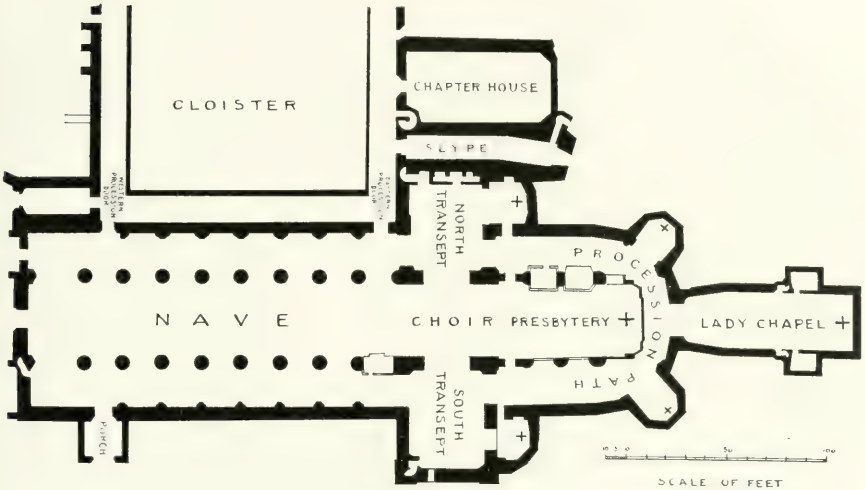
This periapsidal plan—*i.e.*, an apse encircled by an ambulatory—is of much greater antiquity than has usually been supposed.[2] It is known that the very early church of St. Severus at Naples had an apse opening by three arches into an atrium behind. From a passage in the *Liber Pontificalis* it appears that the same plan existed in S. Maria Maggiore, Rome, in the time of Paschal I. (817-824); and as this basilica was rebuilt by Sextus III. (433-440), the periapsidal plan can be dated back to the first half of the fifth century; this ambulatory perished in one of the later restorations of the basilica, perhaps in order to provide a solid wall-surface for the mosaics which were placed in the apse in 1295. The same plan existed in SS. Cosma e Damiano, Rome, which was consecrated by Felix IV. (526-536); and in Africa at Tebessa. Another curious bit of evidence may be adduced. There was found *c.* 1850 near Orléansville, in N. Africa, a bronze lamp-holder in the shape of a basilica; to the east it terminates in three arches, just as at St. Severus, Naples; it is beyond doubt one of the most ancient representations in existence of an early Christian church. At St. Martin de Tours Comte Robert de Lasteyrie has shewn that there was built early in the tenth century an apse of five bays encircled by an ambulatory from which radiated five chapels; as this was one of the most famous pilgrim churches in Europe, the motive of the plan is evident (118). Then follows the ambulatory with radiating chapels added to Notre Dame de la Couture, Le Mans, in the time of Abbot Gauzberts (990-1007), who is known to have done much building at Tours. To the first quarter of the eleventh century



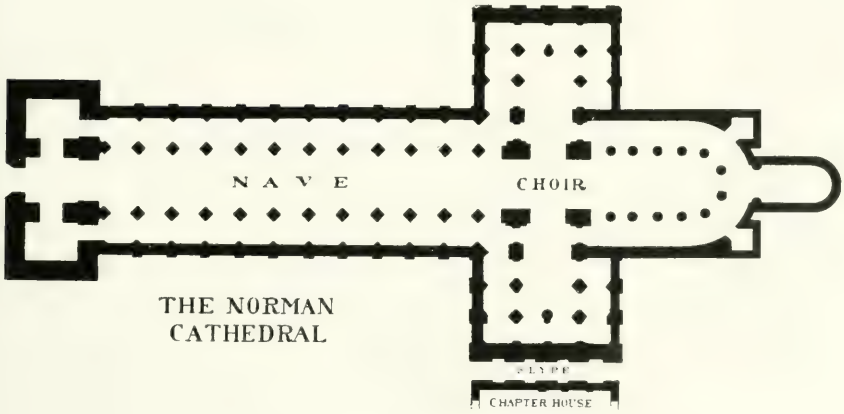
Naples: S. Severus

[1] For plans of the two Lady chapels see the writer's *Westminster Abbey*, 12 and 13.

[2] See references and illustrations in Cabrol's *Dictionnaire d'archéologie et de liturgie*, xiii. 579, and Comte Robert de Lasteyrie's *L'architecture religieuse en France à l'époque romane*, 91 and 188. Comte de Lasteyrie urges (p. 187) that the term *ambulatory* or *deambulatory* should be dropped, because in mediæval French it is applied not to a continuous passage on the ground floor but to one in an upper aisle, in which altars were sometimes placed, as in the upper aisle of the chancel of Gloucester cathedral; he prefers to revive for the procession path on the ground floor the mediæval term *carolle*. Chapels radiating from the *carolle* he styles *chapelles rayonnantes*. Up to the middle of the twelfth century the *carolle à chapelles rayonnantes* were almost exclusively an appanage of Benedictine churches: after that it was adopted in all the Greater churches, except by the Cistercians. Of the periapsidal chancels the earliest have alternately radiating chapel and window; the later, starting with St. Germer in 1135 and St. Denis in 1140, suppress the windows, and build the chapels all contiguous, one in each bay (*Ibid.*, p. 300).



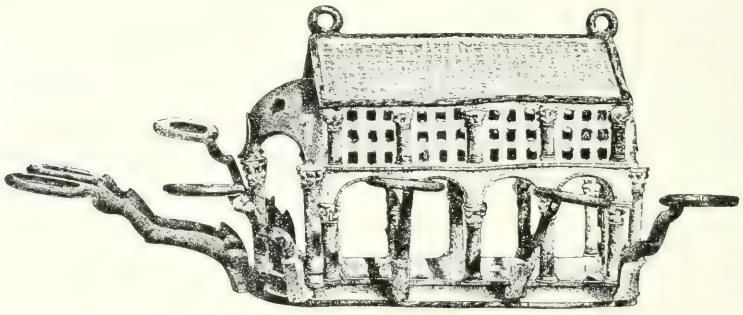
T. G. Gloucester Cathedral



T. G. J. Norman Winchester

belongs the periapsidal planning of S. Savin, Hautes Pyrénées; in the latter half of the century it was adopted in many of the most important churches in Western Europe; it is especially characteristic of the Romanesque schools of Auvergne and Toulouse, Poitou, Le Puy, and Burgundy, in the latter favoured by the influence of the great church of Cluny, which itself may be a derivative from the Benedictine church of St. Benoît-sur-Loire, the choir of which was remodelled after 1026 and consecrated in 1029 (128).

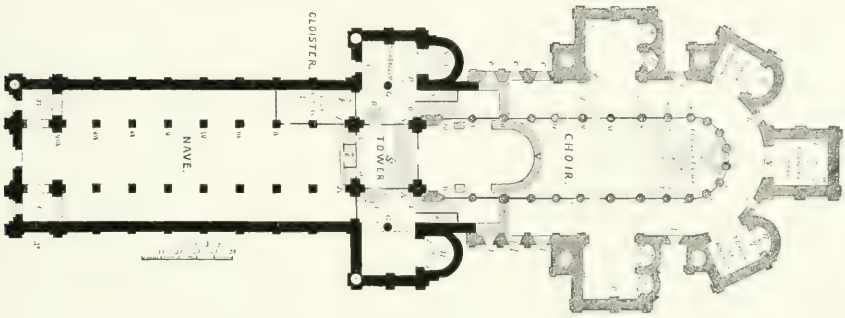
It may be asked: How did this remarkable plan originate? Something like it is to be seen in the Anglo-Saxon church of Brixworth, Northants (118), which may be dated *c.* 680, where there is a small sunk ambulatory round the sanctuary;[1] the same arrangement occurs in Torcello cathedral, 1008, and S. Sofia, Padua, founded *c.* 1025. But a much closer parallel is to be found in certain ancient



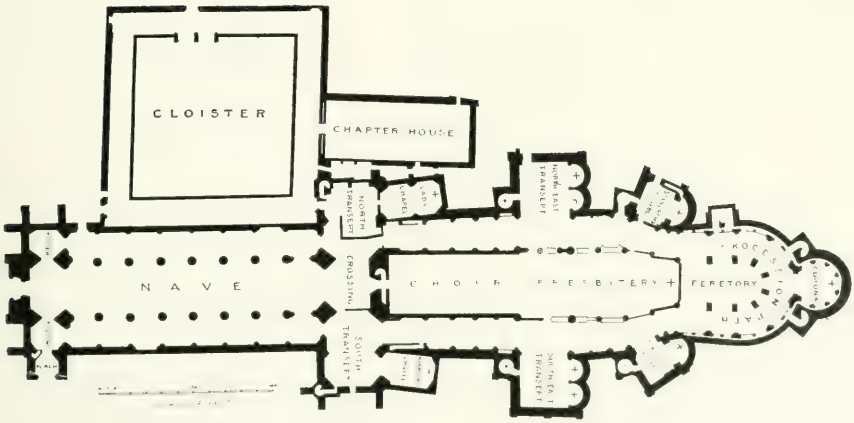
R. A. C. Lamp Stand from Orléansville

crypts, in which the tomb of the saint was placed in a central chamber with a passage round it; the chamber was walled off for security, but there were openings in the walls through which a view of the tomb could be had. On either side of the chancel arch there were staircases leading to the passage; pilgrims would enter by one staircase and leave by the other. Such seems to have been the plan of the Anglo-Saxon cathedral of Canterbury (30). The crypt of the Anglo-Saxon parish church of Wing, Bucks., covered by a rude and later barrel vault, has all the features enumerated above (118). Similar periapsidal crypts occur at Auxerre, Chartres, and St. Denis; all of very early date. It is almost impossible not to conjecture that here we have the origin of the periapsidal plan. It originated in the crypt of pilgrim churches, and in the crypt was found very convenient; and when the relics of the saint were translated from the crypt to the church above,

[1] See plan and section in Baldwin Brown's *Arts in Early England*, ii. 248 and 251.



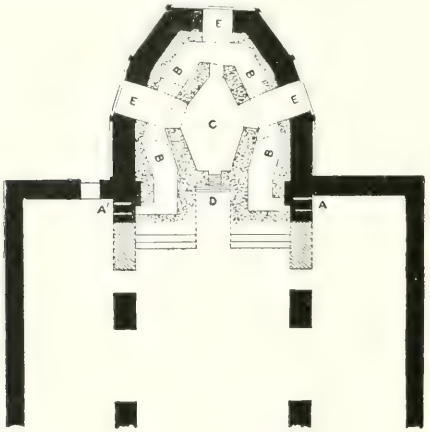
R. W. Canterbury Cathedral in 1174



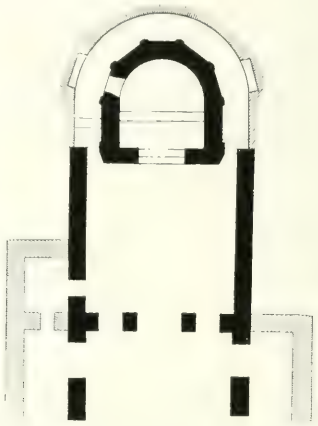
R. W. Canterbury Cathedral

which occurred as early as the fifth century in St. Martin de Tours, it would be natural to make use aboveground of the plan which had served so well below.

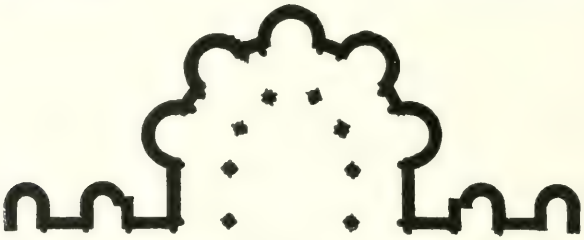
Accepting the above as a probable explanation of the aisle-encircled apse, there is still to be accounted for the fact that nearly always there are three or more chapels radiating from it to the north-east, east, and south-east. It is suggested



B. B. Wing Crypt, Bucks.

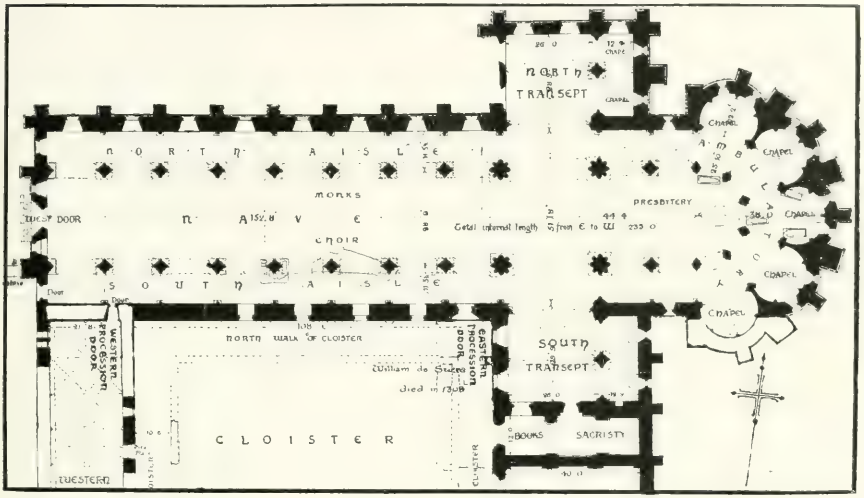


B. B. Brixworth Chancel, Northants

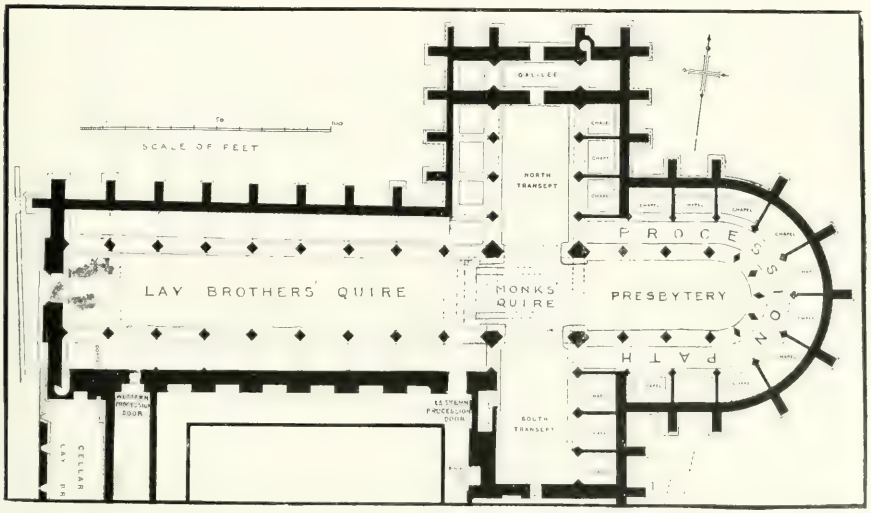


R. L. St. Martin de Tours, A.D. 997

that these chapels go back to the early days of Roman Christianity. In the sepulchral chambers of the Roman catacombs tomb-recesses were very commonly hewn in the side walls. Similar recesses occur in the church of the Holy Sepulchre at Jerusalem. In the outer wall of the apses of the early basilicas of Rome, semi-circular recesses, usually three in number, occur, provided for tombs of the clergy or others to whom the privilege might be granted of being buried as near as possible

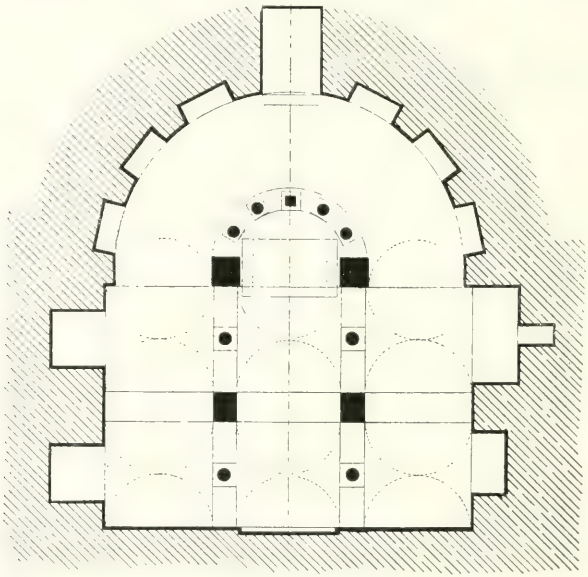


C. L. Croxden Abbey, Stafford



H. E. Beaulieu Abbey, Hants

to the martyr's relics: this arrangement is preserved in S. Georgio in Velabro, Rome, and at Acquapendente in Tuscany, though the architecture in the latter has been remodelled in the style of the eighteenth century; it exists in a later and modified form at S. Miniato, Florence.[1] In our own country two Anglo-Saxon parallels may be adduced. In the crypt of Wing, at E, E, E, the external walls are actually pierced with three recesses to the north-east, east, and south-east. At Brixworth also, a seventh-century church, in the outer wall of the ambulatory there are two arched recesses, north-east and south-east. In the tenth-century

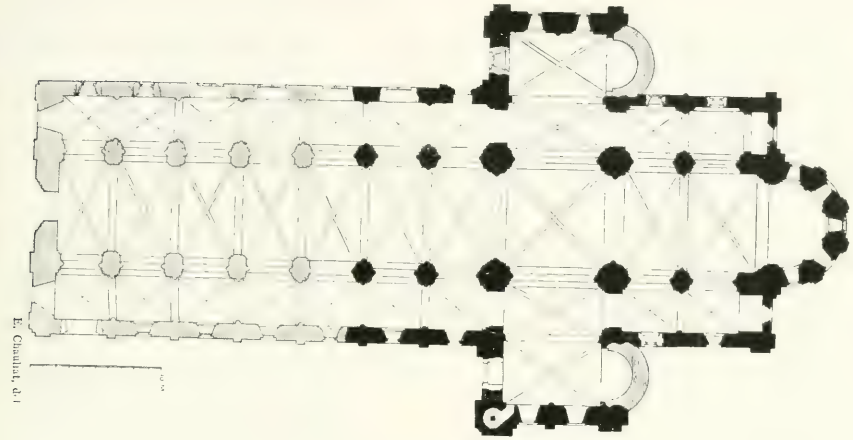


D. P. Quedlinburg Crypt

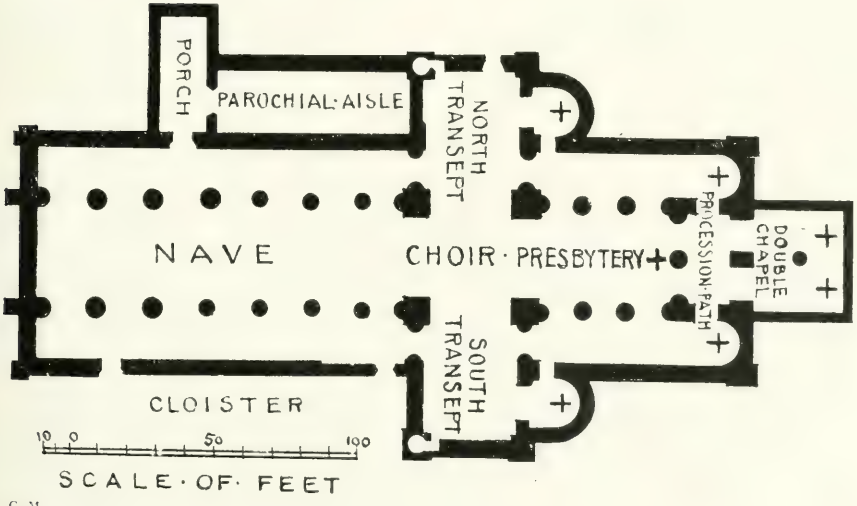
crypt of Quedlinburg, Germany, there are no less than seven recesses radiating from the ambulatory, of which the eastern one is larger and projects further than the rest. Finally, in the original form of the crypt of St. Martin, Tours, we find that between 997 and 1014 these radiating tomb-recesses are enlarged into chapels (118). This then, it is suggested, is the origin of the periapsidal plan with radiating chapels.

In spite of the numerous and manifest advantages of the periapsidal plan, many important schools almost unanimously refused to employ it; those of

[1] West's *Gothic Architecture*, 11.

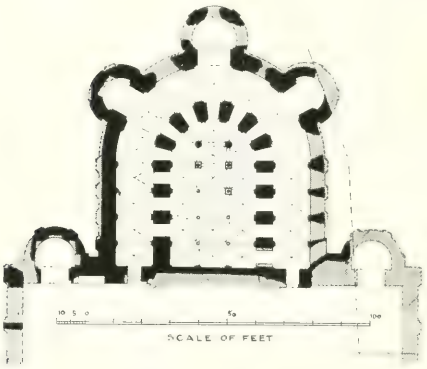


Lessay Abbey, Manche

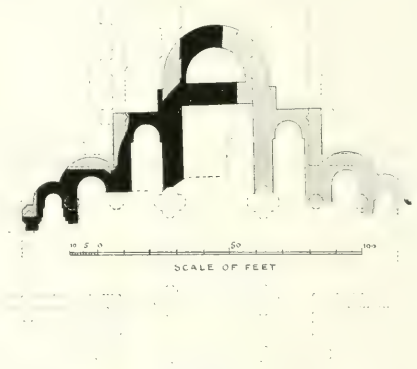


Romsey Abbey, Hant

Lombardy, Germany, Périgueux, Provence, and Normandy. In the latter there was indeed an ambulatory at Fécamp, to which the date 990 has been assigned, but "the chapels of St. Peter and St. Nicholas, and the round arches and carved capitals in the ambulatory belong to 1087-1107."[1] Ambulatories are also credited to the churches of Broglie and Vernon and the foundations of Evreux cathedral; but all these are of uncertain date. The fact that no indisputable instance of the existence of the periapsidal plan is known in Normandy before the Conquest of England in 1066 is very remarkable; for, although the very numerous and large churches which were commenced by the Normans in England in the last half of the eleventh century are in other respects of the type of Romanesque architecture which prevailed in Normandy, yet those of them known to have possessed a periapsidal plan are in a large majority. It is possible that Edward the Confessor's church



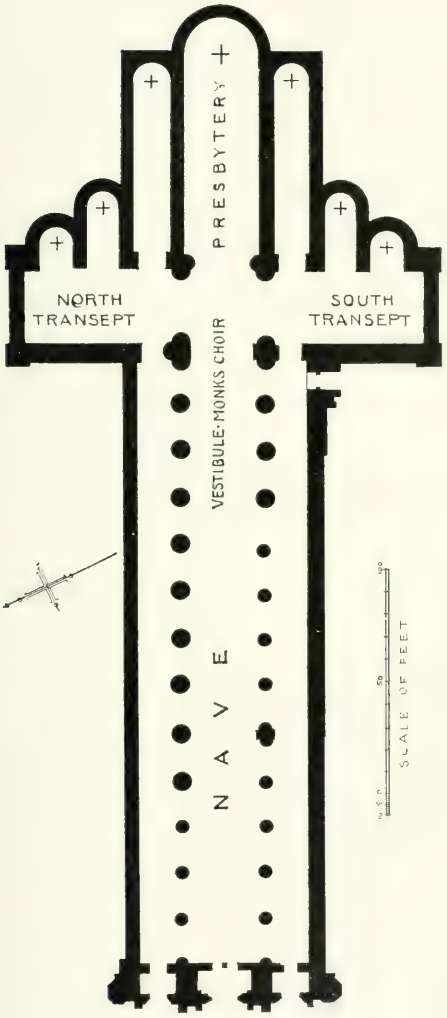
H. B. St. Augustine's, Canterbury



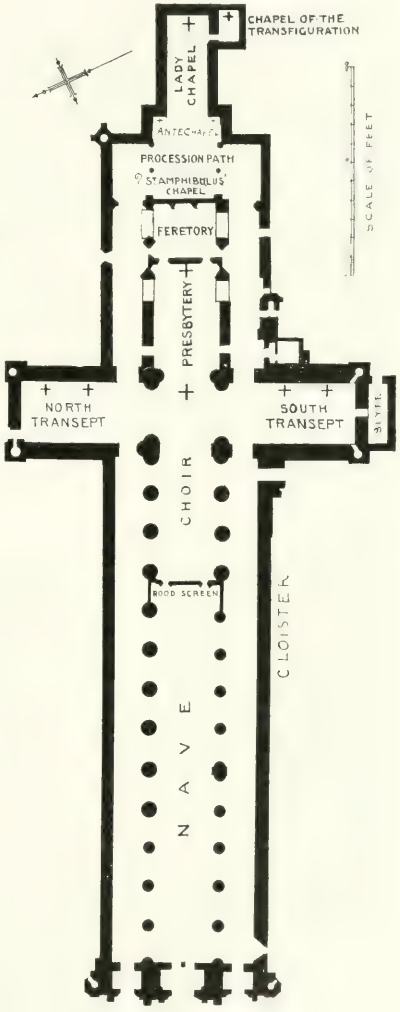
W. H. B. St. Mary's, York

at Westminster was so planned. The documentary evidence runs as follows: "Principalis arae domus altissimis erecta fornicibus quadrato opere parique commissura circumvolvitur"; this seems to mean that the whole of the sanctuary (including the apsidal part) was encircled by a groined ambulatory of coursed ashlar, above which was a triforium chamber covered with a demi-berceau, as in Gloucester choir, or with groined vaulting, as in Jumièges nave. "Ambitus vero ipsius aedis dupplici lapidum arcu ex utroque latere hinc et inde . . . clauditur"; of this the meaning appears to be that the apsidal part of the sanctuary was encircled on either side by two sets of (superposed) arcades; one of them opening into the ambulatory, the other into the triforium chamber, as in Gloucester choir. And as it is expressly said that the apse, and only the apse, has this arrangement, it may be inferred that the rectangular part of the sanctuary, *i.e.*, its western bays, had only

[1] Rivoira's *Lombardic Architecture*, ii. 47.



T. G. St Albans, *c.* 1250



E. E. St Albans

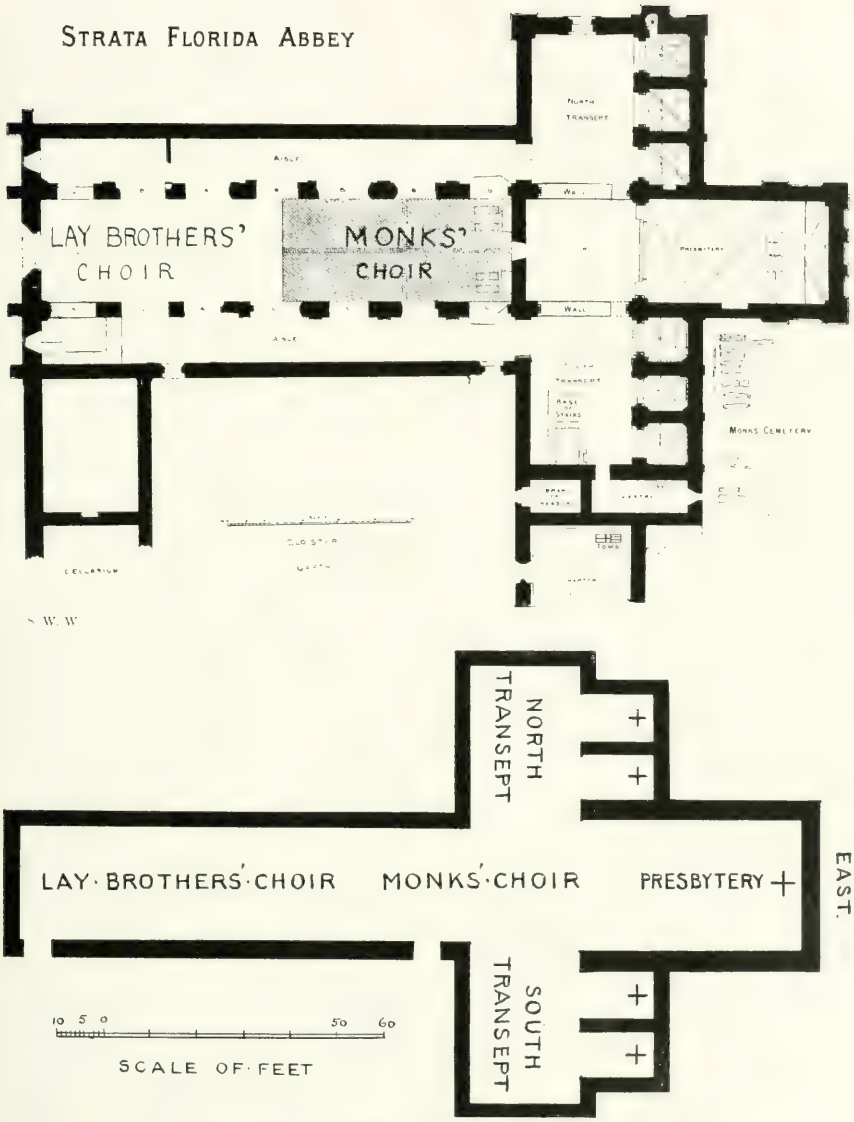
one arcade, that of the triforium chamber; the ground story having on the right and left solid walls, just as at Cérisy and St. Albans.[1] Be that as it may, in the very next year after the Conquest, there was founded at Senlac near Hastings, where William won his great victory, a great Benedictine abbey, which still goes by the name of Battle abbey; the foundations of the church have been uncovered and shew a periapsidal east end. The following is a list of the Romanesque churches in England believed to have had this plan: there may have been more.

Westminster abbey	Benedictine monks	Begun 1050.
Battle abbey	Benedictine monks	Founded 1067; consecration, 1095.
Worcester cathedral	Benedictine monks	Begun 1084.
Canterbury, St. Augustine's abbey (122)	Benedictine monks	Begun 1070-1087; partly finished in 1091.
Winchester cathedral (115)	Benedictine monks	1079 to 1093.
Bury St. Edmund's abbey	Benedictine monks	Consecration in 1096.
Tewkesbury abbey	Benedictine monks	Begun *c.* 1087; monks entered, 1102.
Gloucester abbey (115)	Benedictine monks	Begun in 1089; choir finished in 1100.
Dover, St. Martin le Grand, priory	Benedictine monks	Before 1090.
Chichester cathedral	Secular canons	Begun *c.* 1091; consecrated in 1108.
Chester, St. Werburgh's abbey	Benedictine monks	Founded 1093.
Norwich cathedral	Benedictine monks	Choir, 1096-1119.
Lewes priory	Cluniac monks	Enlarged 1091 - 1098 and 1142-1147.
Canterbury cathedral (117)	Benedictine monks	Enlarged 1096-1107.
Pershore abbey	Benedictine monks	Late eleventh century.
Tynemouth priory	Benedictine monks	*c.* 1090-1100.
Crowland abbey	Benedictine monks	Begun 1113.
Reading abbey	Benedictine monks	Founded 1121.
Leominster priory (268)	Benedictine monks	Soon after 1121.
St. Bartholomew's priory, Smithfield	Austin canons	1123-1133.
Lichfield cathedral	Secular canons.	

The following Gothic churches, and possibly others, also had ambulatory and radiating chapels:—

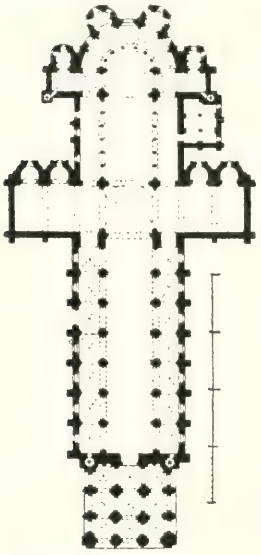
Croxden, Stafford (119)	Cistercian monks	After 1190.
Lincoln minster (53)	Secular canons	1192.
Beaulieu abbey (119)	Cistercian monks	Founded in 1204; consecrated in 1246.
Westminster abbey	Benedictine monks	Begun in 1245.
Hayles abbey, Gloucester	Cistercian monks	Remodelled 1270-1277.
Tewkesbury abbey	Benedictine monks	Remodelled *c.* 1315-*c.* 1350.

[1] For plan of the Norman church see the writer's *Westminster Abbey*, p. 11; the translation there printed differs from that given above and should be corrected.



Bayham Abbey, *c.* 1250

Of these Lincoln had seven radiating chapels (53). Beaulieu abbey had ten radiating chapels running continuously round the ambulatory; its chevet[1] is a direct copy of that of Clairvaux *c.* 1174; its transepts are modelled on those of Citeaux; both are Cistercian churches in Burgundy (119). Hayles abbey received a great eastern extension in order to provide a feretory for a present of the Holy Blood: the plan of the extension was the same as in Westminster abbey. Tewkesbury chancel originally had low piers like those round Gloucester chancel; in the fourteenth century they were heightened, and pointed substituted for semicircular arches; the radiating chapels were also rebuilt or remodelled (43).



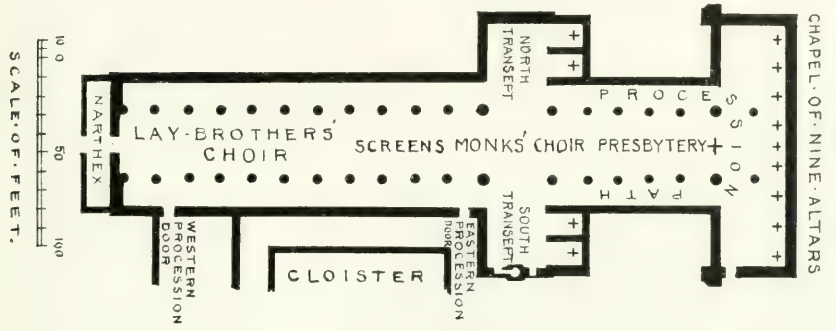
E. I.
St. Benoît-sur-Loire

Of the examples given above most are either in the South or the West of England; in Northumberland there is Tynemouth; and in the eastern counties Bury St. Edmund's, Norwich, and Croyland.

Chevets thus planned had many great merits. They provided a route for processions as well as for pilgrims all round the chancel; they provided eastern chapels, varying from the original three, *e.g.*, at Gloucester, to the five of Lewes and Westminster, the seven of St. Hugh's, Lincoln, and the ten of Beaulieu. Moreover the ambulatory gave ready access to all the eastern chapels, and made it possible to pass from the north to the south aisle of the chancel, or *vice versa*, without crossing the chancel, which indeed was fenced off with screens, and without making a long detour round by the central transept. Having so many recommendations, it is not surprising that in most parts of France it was accepted as the normal and final type of plan, and remained in use till the very end; *e.g.*, in Orléans cathedral, destroyed by the Huguenots, the rebuilding of which with a periapsidal chevet was commenced in 1601.

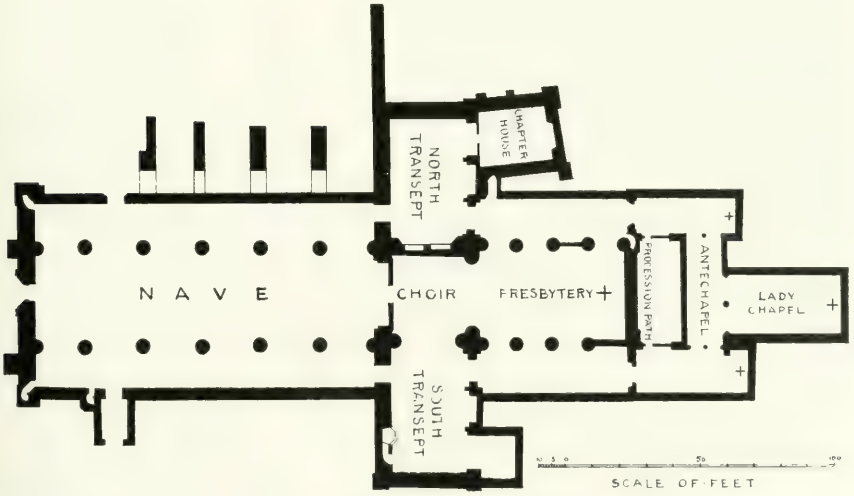
Why then was this plan ultimately abandoned in England? One reason may be that it was the bad lighting of a church so planned. Inadequacy of light was one of the greatest troubles of the old church-builders. With the exception of variation of the requirements of ritual, nothing modified so profoundly the plan, elevation, and design of the mediæval church as the necessity to improve its lighting, and, above all, the lighting at the east end of the church, where was situated the High altar. In the eleventh and twelfth centuries and long afterwards the whole

[1] The term *chevet* appears to be restricted by English architectural writers to the east end of churches of periapsidal plan. It merely means "the head" of the church, *i.e.*, the east end, and is equally applicable whether the east end is circular, polygonal, or rectangular.



T. G.

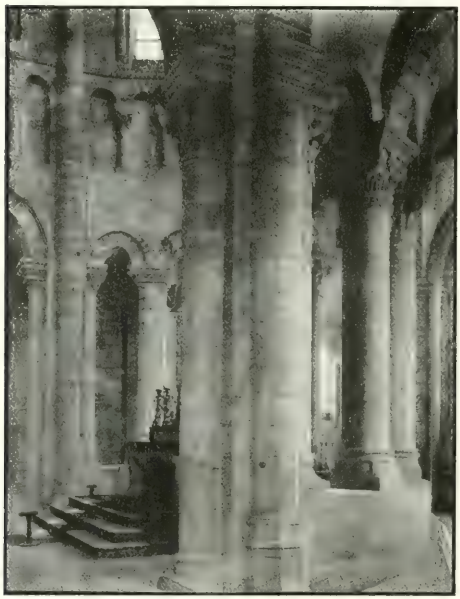
Fountains Abbey



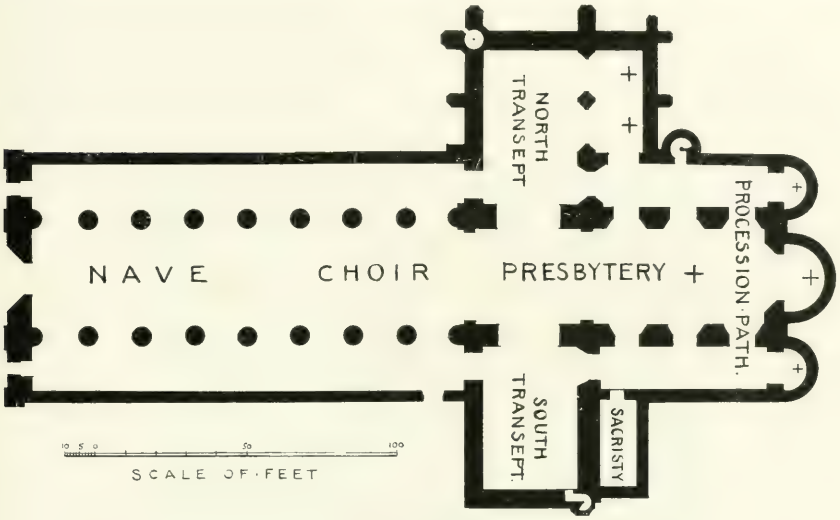
T. G.

St. David's

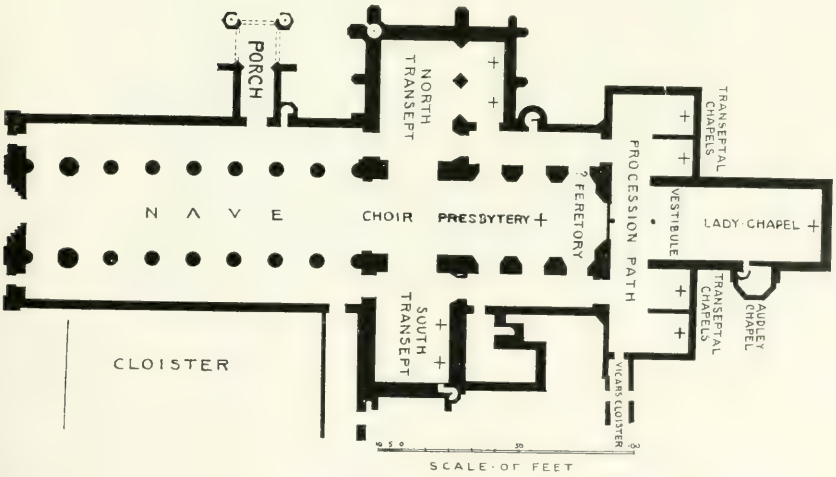
congregation was illiterate; not one in a thousand possessed a missal, not one in a thousand could read. For the benefit of these illiterate thousands the Catholic Church had ordained the service of the Mass, as it remains to this day, in such a way that by observing the position of the priest with respect to the altar, his obeisances and the movements of his hands, everyone who could see him could follow perfectly well and participate in every part of the service. To do so, however, the congregation must be able to have a good view of the celebrant. All the light possible must be concentrated on the altar and the priest. In an Anglo-Norman minster without an eastern ambulatory the congregation could see fairly well. In such a church the apse, where stood the High altar, was lighted by ten eastern windows, as at St. Georges de Boscherville, or by fifteen, as at Peterborough. But in a periapsidal church, such as Gloucester, the lowest range of five windows was useless for lighting the apse and altar, for these windows did not look into the central apse, but into the radiating chapels and ambulatory. This may well have condemned the periapsidal plan, at least in England. But in England there was a ritualistic difficulty, which does not seem to have been felt abroad. When there were three radiating chapels, two of them did not point due east; where there were five, seven, or ten, still only one pointed due east; in other words, of the radiating chapels only one was planned so as to have its altar correctly orientated. Abroad this does not seem to have troubled the authorities; they simply placed the altars centrally in each chapel, regardless of the orientation. But we seem to have been purists as to this matter of orientation. As has been pointed out above, the Anglo-Saxon cathedral of Canterbury seems to have been first orientated to the west, and afterwards to have been changed to the east (30). Winchester cathedral, *c.* 1079, has an apse encircled by a semicircular procession aisle; but this aisle externally is made rectangular to the east, so that the north-east and south-east chapels do not radiate, and their altars are correctly



E. L. C. St. Benoît-sur-Loire, Loiret



T. G. Norman Hereford



T. G. Hereford Cathedral

orientated (115). At Norwich in 1096 these same chapels are constructed in a curious double form, so that their altars point nearly due east. But the most convincing proof of the importance attached in England to orientation is seen in the position of the altars which formerly existed in the four radiating chapels of Westminster abbey as set out in 1245; none of these are placed centrally, but in the

G. H. W. Norwich Cathedral: Procession Path

second bay from the ambulatory; they are not indeed due east, but on the way to being due east (132). This then may be the reason why the periapsidal plan, at first so very popular, disappeared from England altogether after the end of the first quarter of the twelfth century, with the exceptions of Lincoln and Westminster, both due to Continental inspiration, and Croxden, Beaulieu, and Hayles, all Cistercian churches, and like the Cistercian churches in general, planned conformably to

C. W.

Salisbury Cathedral

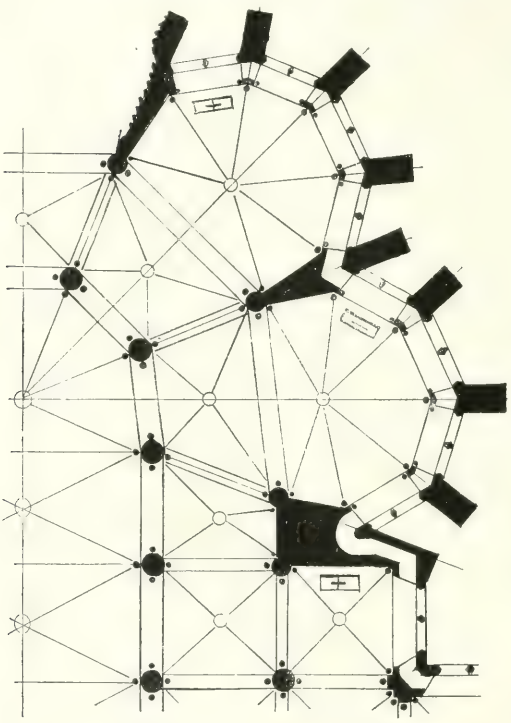
T. G.

Wells Cathedral

Continental rather than English precedents. As for Tewkesbury, its periapsidal plan was laid down in the eleventh century, and as remodelled in the fourteenth, the altars of the pentagonal chapels were set out in Westminster fashion.

II. THE CHEVET WITH THREE PARALLEL EASTERN APSES

II. A second and very important plan is that of the chevet with three parallel eastern apses; we may for shortness style it the triapsal plan; only it must be remembered that the three apses are parallel;[1] the central apse is the breadth of the chancel; the side apses to the north and south are narrow, being usually of the breadth of the aisles; the central apse projects considerably more to the east than do the lateral apses. Of this there are variants. It was easier to put gable roofs over the little lateral apses, if they were built out square to the east, as at St. Mary's, York; in such a case these side chapels are semicircular within but rectangular without (122). The next and natural variation would be to make them rectangular inside as well as outside.

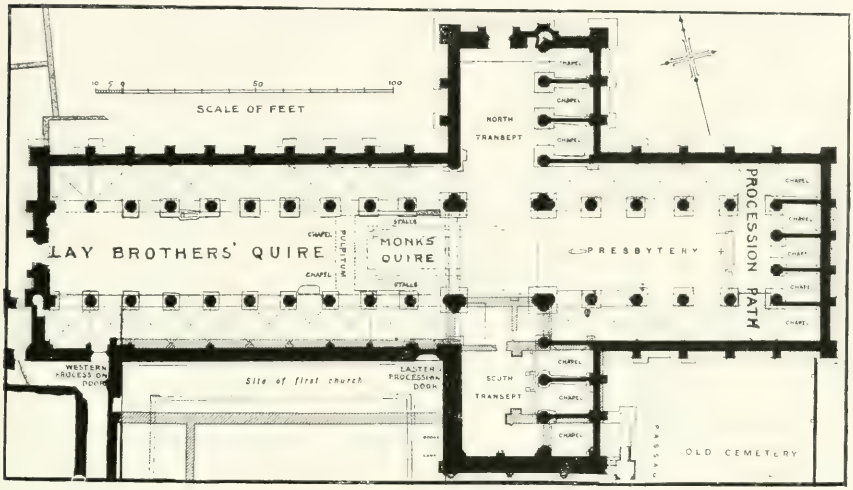


W. R. L. Westminster: South-eastern Chapels

The triapsal is no doubt more ancient than the periapsidal plan; but it cannot be traced back so far in the West. In the Eastern Church it occurs very early; *e.g.*, the fifth-century churches of St. Simon Stylites, Kalal Sein'au, and Tourmanin in Syria have three parallel apses. In Gaul it is not known to occur till the sixth century.[2] Numerous examples are found in the ninth century; *e.g.*, Pope Hadrian II. is recorded to have placed three apses in the church of S. Maria

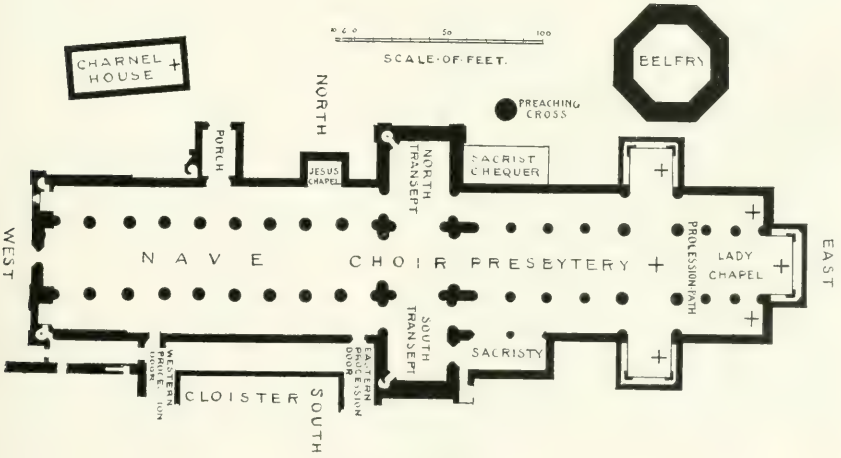
[1] There is another triapsal plan, unknown in England, in which one apse points to the east, and the other two due north and south; *e.g.*, Constantine's basilica at Bethlehem and S. Maria in Capitolio, Cologne.

[2] Dom H. Leclercq in Cabrol's *Dictionnaire*, xiii. 584.



H. E.

Waverley Abbey, Surrey



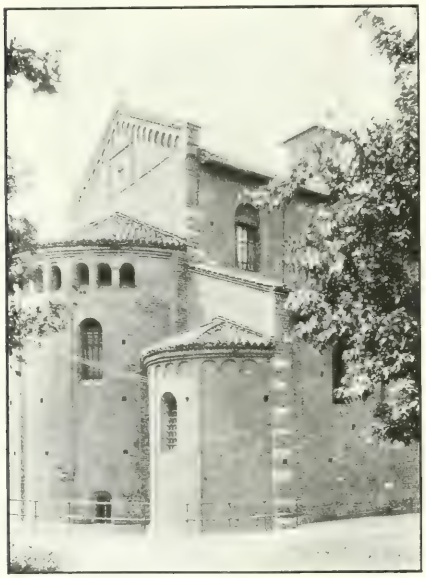
H. E.

Worcester Cathedral

in Cosmedin in the year 872. Other early examples in Italy are S. Maria in Domnica, Rome; Torcello cathedral; S. Ambrogio and S. Vincenzo in Prato, Milan, and Alliata, near Monza; all these are of the ninth century.[1] It was the plan of nearly all, if not all, the Greater Romanesque churches of Normandy.[2] In England not a single complete example remains; but it may still be seen in Normandy at Cérisy, Lessay, St. Nicholas, Caen, St. Georges de Boscherville and St. Gabriel. In England the following churches were triapsal; there may have been others.

Canterbury cathedral 117	Benedictine monks	Lanfranc's work, 1070-1077.
Selby abbey	Benedictine monks	Founded 1069.
St. Alban's abbey (123)	Benedictine monks	Begun 1077-1088.
Wenlock priory	Cluniac monks	Founded *c.* 1080.
Durham cathedral	Benedictine monks	Begun 1093.
Castle Acre priory	Cluniac monks	Founded before 1089 or in 1090.
York, St. Mary's abbey (122	Benedictine monks	Begun 1089.
Exeter cathedral	Secular canons	Founded 1112.
Peterborough abbey 138	Benedictine monks	Begun 1117 or 1118.

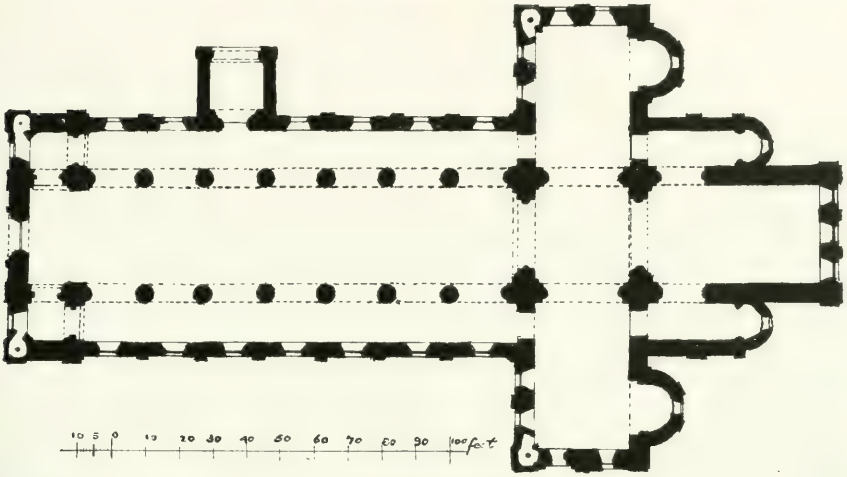
Of all these great triapsal chevets in England nothing remains above ground except the central apses of Peterborough and Norwich; in the parish church of St. Mary, Guildford, however, the two lateral apses still exist. What is the reason why so few of our Greater churches were built on this plan, and why has the destruction of such chevets been so widespread? It was at any rate a good plan so far as the orientation of the altars went, and it provided abundant light for the High altar. The reason is to be found in the unsuitability of the plan for processional ritual and the visits of pilgrims. From the very first the triapsal plan encountered opposition in England. Rochester cathedral was set out soon after 1077 with a straight eastern wall,



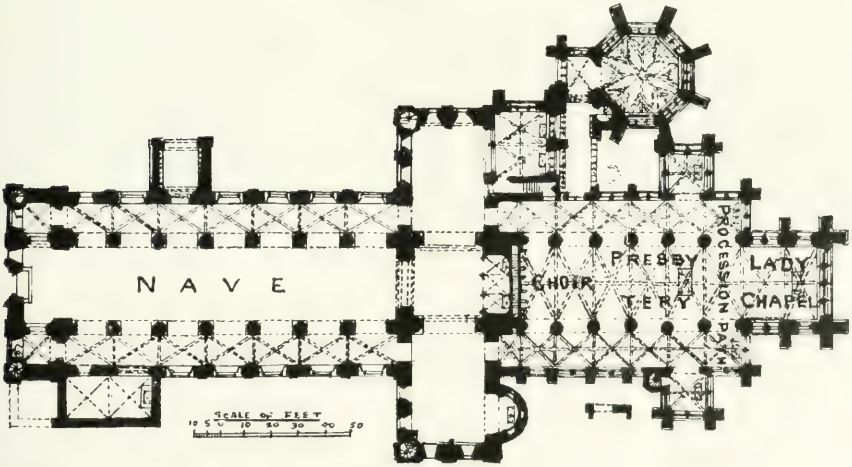
F. F. Milan S. Vincente in Prato

[1] Comte de Lasteyrie adds in France Saint-Généroux, Gourgé, and perhaps more ancient still, the cathedral of Vaison and Valcabrère. There is no doubt that this plan was widely spread in Italy and Gaul from the ninth century.—*Architecture romane*, 182.

[2] The Norman cathedral of Lincoln, which was triapsal, is recorded to have been modelled on the cathedral of Rouen; we may surmise, therefore, that the latter also was triapsal.



R. M. C. Norman Southwell



R. M. C. Southwell Minster

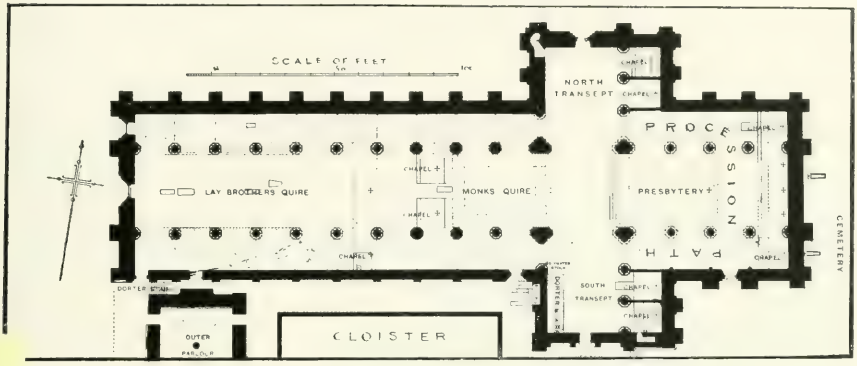
from which projected eastward a small rectangular chapel. Hereford cathedral was begun soon after 1079 with a rectangular sanctuary (129). The plan of Hereford was repeated at Llandaff. Ely cathedral, after laying the foundation of a central apse, between 1100 and 1107 built its sanctuary rectangular. Rectangular sanctuaries were set out at Sherborne, begun in 1107; at Southwell, probably not earlier than 1109;[1] at St. Martin's priory, Dover, 1131-1139; and in Bristol cathedral, begun in 1142.[2] Romsey, begun about 1110, had both a rectangular sanctuary and a rectangular

H. P. Peterborough from South-west

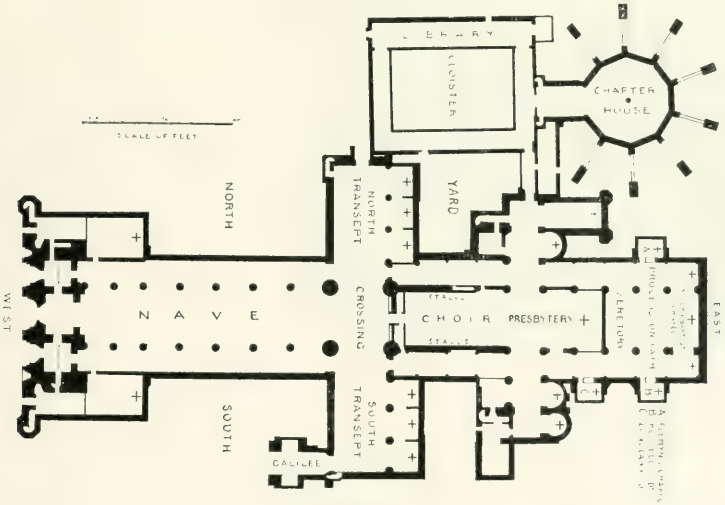
ambulatory as well (121). Evidently the knell of the Italian apse had sounded. Of the pure triapsal plan Peterborough, commenced in 1117 or 1118, was the last great example, while, except for some foreign importations, the periapsidal plan, in spite of its great merits, also was passing away by *c.* 1130; St. Bartholomew's, Smithfield, 1123-1133, was one of the last to employ it.

[1] See C. Hodgson Fowler in *Architect*, 23rd June 1877.

[2] In 1860 the square termination of the Norman choir was discovered at the eastern side of the second pier from the central tower. R. H. Warren in *Clifton Antiquarian Club*, iv. 221.



Jervaulx Abbey, Yorkshire



Lincoln Minster

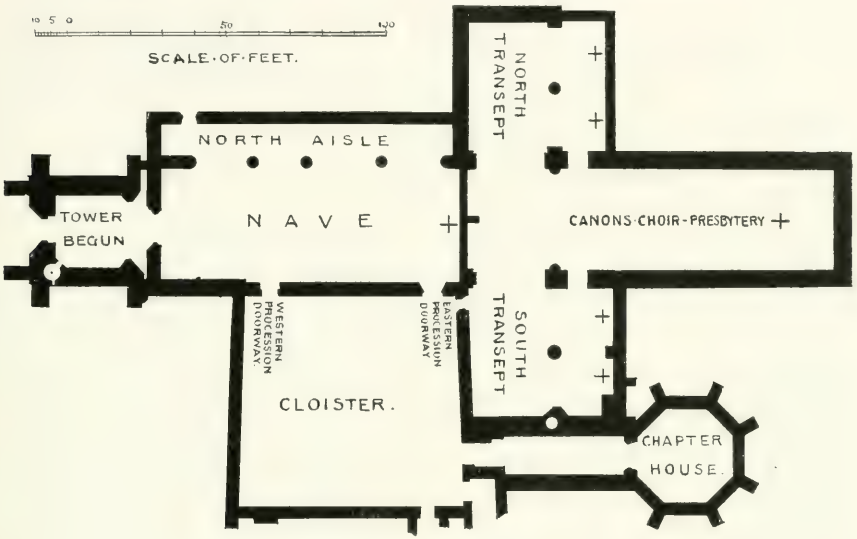
B. CHURCHES WITH RECTANGULAR CHEVETS

I. CHEVETS WITH EXTERNAL PROCESSION PATH AND EXTERNAL EASTERN CHAPEL OR CHAPELS

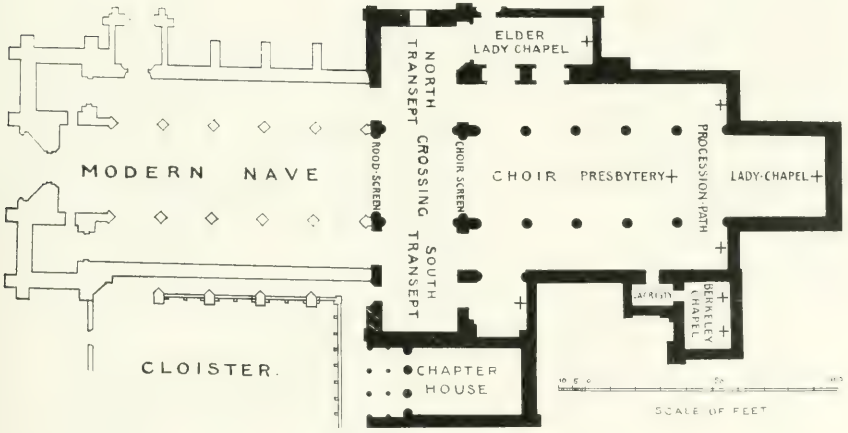
Everything pointed to what was to be the definitive type of English planning, which was to dissociate it absolutely from that of France, viz., a church built in rectangular compartments, with every altar orientated properly. Given the rectangular sanctuary, which had been arrived at in Rochester, Hereford, Llandaff, Ely, Sherborne, Romsey, Southwell, Dover, and Bristol, the next thing was to build to the rear of it, *i.e.*, to the east, a procession path, and east of the procession path a row of chapels. The cheapest way to manage this was to build both procession path and chapels outside the main eastern wall of the church, keeping both quite low, only one story high; the procession path communicating with the presbytery by an arch or arches. To perfect the plan, it was necessary that the eastern altars should not be placed inside the procession path; otherwise, with their fence screens, they would be obstructive to processions, and moreover would, with the valuable reliquaries, etc., placed on or near them, be in danger from pilgrims and others who were being shewn round the church. Romsey, the earliest example of this plan, has this objectionable arrangement of the altars (121); and several of the lesser Gothic churches, simply for want of funds, had to put up with the same imperfection, *e.g.*, Bristol cathedral (139).

H. P. Peterborough from North east

The following is a list of the surviving examples of this plan, *i.e.*, with rectangular presbytery opening by an arch or arches into a low *external* rectangular



T. G. Bolton Priory, Yorkshire



T. G. Bristol Cathedral

ambulatory, east of which is a rectangular chapel or chapels. It follows that the high gabled eastern wall of the church was at least two bays west of the east end. (The third column below gives the number of arches in the east wall of the presbytery, the fourth column the number of eastern chapels):—

Romsey abbey (121)	Benedictine nuns, *c.* 1110	2	2
Hereford cathedral (129)	Secular canons, 1186-1199	1	5
Dore abbey (11, 60)	Cistercian monks, *c.* 1200	3	5
London, Holy Trinity	Austin canons, *c.* 1200	3	3
Winchester cathedral	Benedictine monks, 1202	1	3
Salisbury cathedral (131)	Secular canons, 1220	3	3
Southwark priory	Austin canons, 1213-1238	2	4
St. Patrick's cathedral, Dublin	Secular canons, *c.* 1225	1	3
St. Alban's abbey (123)	Benedictine monks, 1260-1326	3	3
Exeter cathedral	Secular canons, *c.* 1270-1291	2	3
St. David's cathedral (127)	Secular canons, 1298-1308	Wall	3
Milton abbey	Benedictine monks, after 1309	3	...
Wells cathedral (131)	Secular canons, *c.* 1326	3	3
Hexham abbey	Austin canons, *c.* 1350	3	3
Glastonbury abbey	Benedictine monks, 1341-1374	2	3
Sherborne abbey	Benedictine monks, 1436-1459	...	3
Peterborough abbey	Benedictine monks, 1438-1528	1	5
Chester abbey	Benedictine monks	1	3

To the above must be added the noble chevets of:-

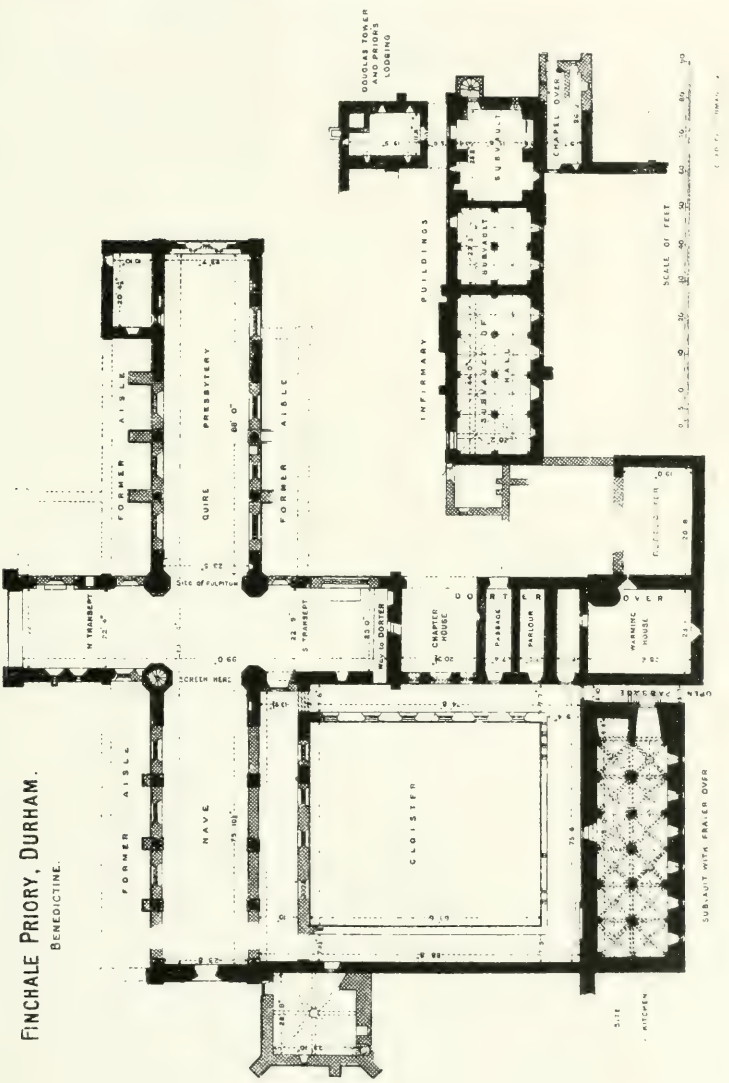
Fountains abbey (127)	Cistercian monks, 1220-1247	1	9 altars.
Durham cathedral	Benedictine monks, 1242-1280	1	9 „

In these two instances the procession path and eastern chapels are not low, but rise to the full height of the chancel.

In some cases, to get an increased number of chapels, the procession path with its chapels was given a northern and southern prolongation, forming a low transept; in this way Hereford and Wells obtained five or six eastern chapels; Fountains and Durham nine each. Sometimes all the eastern chapels run uniformly from north to south; *e.g.*, at Dore; sometimes the central chapel projects further eastward than the rest; as at Hereford when the present Lady chapel was built in the thirteenth century (129).

The geographical distribution of this type of plan is remarkable:—

North of England	Fountains, Durham, Hexham.
East	Peterborough.
South	St. Albans, and Holy Trinity, London.
West	Romsey, Hereford, Dore, Winchester, Llandaff, Salisbury, Southwark, Dublin, St. Patrick's, Exeter, St. David's, Milton, Wells, Glastonbury, Sherborne, Chester.


FINCHALE PRIORY, DURHAM.
BENEDICTINE.
FORMER AISLE
NAVE
FORMER AISLE
QUIRE
PRESBYTERY
FORMER AISLE
N. TRANSEPT
S. TRANSEPT
SCREEN HERE
CLOISTER
CHAPTER HOUSE
PASSAGE
PARLOUR
WARMING HOUSE
OVER
INFIRMARY BUILDINGS
SUBVAULT
CHAPEL OVER
DOUGLAS TOWER AND PRIOR'S LODGING
SUBVAULT WITH FRATER OVER
SITE OF KITCHEN
SCALE OF FEET

D. & P.

Wells Cathedral from South-east

Southwark was more or less a dependency of Winchester, and is therefore classed with it.[1] The Romsey plan is plainly the property and special feature of that early school of Gothic which individualised itself in the West of England. In all these examples the plan provides an admirable eastern aisle for processions and for pilgrims. But in every one, except St. David's, the ambulatory is provided at the expense of the lower windows of the east wall of the presbytery. All the other presbyteries were badly lighted, except Milton and Exeter, which were not built till big clerestory windows had come into fashion, and Winchester and Sherborne, which were remodelled later so as to have big clerestories. St. David's alone succeeded in reconciling the two apparently incompatible demands, viz., an eastern ambulatory and a presbytery with low eastern windows (127). At St. David's the problem was dealt with in a very curious fashion. The presbytery was built rectangular, and its east wall was pierced, just like that of Southwell minster, with two tiers of lancet windows. This was about 1180, unless, as is possible, the plan of the east end was changed after the fall of the central tower in 1220. But in the last half of the next century the choir aisles, which had stopped short in a line with the east wall of the presbytery, were continued eastward for two bays as corridors, and then returned and joined one another, forming an eastern ambulatory, having three chapels east of it, but separated from the presbytery by one unoccupied bay. As this unoccupied central bay was without a roof, the lower range of the east windows of the presbytery was not blocked. Thus St. David's was the first to have the honour of possessing both well-lighted rectangular presbytery and eastern ambulatory and chapels. Later on, however, it lost the distinction, for the unroofed bay next to the east wall of the presbytery was vaulted *c.* 1509; and the lower lights in that wall were blocked.

II. CHEVETS WITH INTERNAL PROCESSION PATH AND LOW EXTERNAL EASTERN CHAPEL OR CHAPELS

But it was possible to obtain an ambulatory in a much simpler way. If the chancel was lengthened by one bay, and the High altar moved one bay back, *i.e.*, one bay to the west, then the easternmost bay could be employed as procession path. In that case the high, gabled east wall of the church was one bay west of the east end of the church. The earliest example is that of Hereford cathedral, begun soon after 1079 (129). Here the sanctuary was rectangular, as at Ely, Sherborne, Southwell, and Dover; but there is this great difference, that on the other side of the high east wall of the presbytery there were originally three low chapels.[2] From Sir Gilbert Scott's paper on "Hereford

[1] Salisbury and Winchester are, geographically, midway between the southern and the western group, and in several features of plan and design possess points of resemblance to both.

[2] In the plan of the Norman cathedral of Hereford there is no authority for the eastern aisle of the north transept. The central of the three eastern chapels may have been considerably longer.

Cathedral" in the *Archæological Journal*, 1877, it appears that these three chapels were apsidal. "Excavations shewed," he wrote, "that the Norman cathedral terminated eastward in an apse, which was a separate and narrow structure opening into the presbytery by an arch of moderate dimensions. Each aisle also terminated in a smaller apse, and each of the three apses had its own separate roof." Mr Gordon Hills describes in similar terms the drawings of the excavations made by Dean Merewether in 1868 (*Journal of the Archæological Association*, vol. xxvii. pp. 50 and 497). So far as Hereford sanctuary is rectangular, it connects with the plan of Ely, Sherborne, Southwell, Dover, Rochester, and Old Sarum; so far as it retains three parallel eastern apses, it connects with the plan of Durham, St. Mary, York, and the rest. But the central apses of Durham, Peterborough, and the others were on a vastly loftier scale than that of Hereford. The former, as may still be seen at Peterborough (138) and Norwich, was as broad as the sanctuary and nearly as lofty. That of Hereford was in comparison quite insignificant; it was but little broader and but little loftier than the existing arch which gave access to it from the presbytery. Hereford cathedral, when first built, and as seen outside from the east, with three tiny apses crouching below the great eastern gable wall of the church, must have looked strangely different from the other triapsal churches of England and Normandy. But, whatever its aspect, it was thought at the time a very clever plan. For William of Malmesbury, who wrote between 1131 and 1148, says of it: "*Aquensem basilicam tereti schemate pro modo suo imitatus*," *i.e.*, "it was neatly planned and was a copy on a reduced scale of a church at Aix." Access was obtained to the central apse from the sanctuary by a single semicircular arch,[1] which still remains; and to the lateral apses by the eastern arches of the choir aisles. What is still more important, the High altar was not placed close up to the eastern arch of the sanctuary, but one bay west of it. Thus, of the three bays of which the eastern limb consists, only the two western bays would form the sanctuary. The function of the easternmost bay was twofold. On the one hand, it formed a procession path; on the other hand, it provided access to all three eastern chapels. It follows that what made the plan of Hereford such a "*teres schema*" was that it provided both an ambulatory and three eastern chapels; it was a rectangular equivalent of the semicircular ambulatories and radiating chapels of Gloucester and Norwich. Nevertheless for this a heavy price had to be paid. For the eastern chapel deprived the sanctuary of the lower row of eastern windows, for which room was found in the sanctuaries of churches of the type of Durham or Ely.

[1] In Llandaff cathedral also the Norman sanctuary is rectangular, and its eastern wall is pierced by a single Norman arch, which probably led to a small apsidal chapel, as at Hereford. The Llandaff sanctuary had no aisles.

F. R. P. S. Salisbury Presbytery from West

Hereford sanctuary is and always was very badly lighted from the east. Nevertheless, this plan was a great advance, and the supreme importance of the eleventh-century sanctuary of Hereford in the history of Gothic church-planning has never yet been recognised.

It was not till the last quarter of the twelfth century that the Hereford plan found followers. One of the earliest examples is the Cistercian abbey of Byland in Yorkshire, to which the monks removed in 1177, and in which there is a row of five external rectangular eastern chapels. It has been conjectured by Professor Willis that the eastern limb of York minster, as rebuilt by Archbishop Roger between 1154 and 1181, was arranged as at Byland. In the West of England the examples are numerous. Wells cathedral must have been rebuilt in this fashion *c.* 1180; Christ church, Dublin, about the same time, judging from foundations, also had this plan; so also Chichester cathedral after the fire of 1186, and Lichfield cathedral, probably *c.* 1210. Waverley, a Cistercian abbey in Surrey, rebuilt in 1203, and Hayles, a Cistercian abbey in Gloucestershire, rebuilt 1246-1251, but afterwards remodelled, have been proved by Mr Harold Brakspear to have had this same plan. Evidently it was much in favour in the West of England in the last quarter of the twelfth century and occasionally later.

The following is a list of churches planned as above:—

		Arches.	Chapels.
Hereford cathedral (129)	Secular canons, begun 1079-1095; dedicated 1110	1	3 (eastern)
Byland abbey	Cistercian monks, the monks removed to Byland in 1177	3	5
Dublin, Christ church cathedral	Arrosian canons, *c.* 1175	? 1	? 3
Wells cathedral	Secular canons, *c.* 1180	?	?
Chichester cathedral (749)	Secular canons, after fire of 1186	1	3
Lichfield cathedral	Secular canons, *c.* 1195	?	?
Waverley abbey (133)	Cistercian monks, begun in 1203	3	5
Evesham abbey	Benedictine monks, 1218-1229	3	? 5
Pershore abbey	Benedictine monks, 1223-1239	1	3
Hayles abbey	Cistercian monks, 1246-1251	3	5
Ottery St. Mary	Secular canons, 1337	1	1

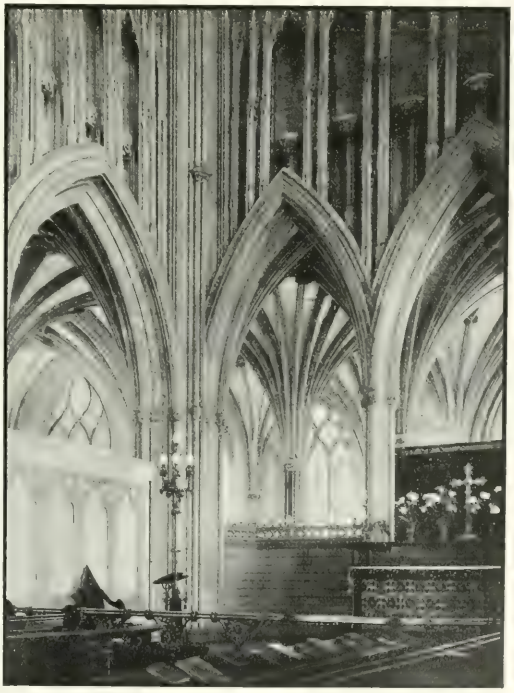
At Byland, Hayles, and Waverley there was a row of five rectangular chapels, none of which projected beyond the rest: this may have been because all three, being Cistercian churches dedicated to Our Lady, needed no separate Lady chapel. At Chichester there is a procession path of two bays; the westernmost bay of which subsequently became a feretory.

III. SAME BUT WITH HIGH EXTERNAL EASTERN CHAPEL

In the second group of churches the procession path was of the full height of the church, but the eastern chapels remained low. Only one step remained; viz., to build the eastern chapels as high as the rest or nearly so. This gave two types of design. Where there was a projecting eastern chapel, as at Chichester, then to raise it to full height gave the elevations of Worcester, Beverley (7), Southwell, Lichfield, and Christchurch.

Worcester cathedral (133)	Benedictine monks	Begun in 1224.
Beverley minster	Secular canons	*c.* 1225.
Southwell minster[1]	Secular canons	*c.* 1230.
Lichfield cathedral	Secular canons	*c.* 1310.
Christchurch	Austin canons	Begun *c.* 1400.

One of the most striking changes internally is the disappearance at last of the low and narrow eastern arch or arches which had opened into the procession path or the eastern chapels. Worcester cathedral and Beverley minster, with the vaults of their chancels continuing in undiminished height and breadth to the extreme east end of the eastern chapel, are not only quite perfect in plan, but with the possible exception of the French chevet of Westminster, are both internally and externally the noblest and most successful designs to be found anywhere, even in this land of beautiful churches. More-



I. F. H. Wells: Presbytery and Retro-choir

[1] Southwell hardly deserves to be placed in this class; for its plan was imperfect, as it is known that there were two altars in the procession path. At Christchurch (45) the Lady chapel obtains its height from the superposition of St. Michael's loft

Lincoln Minster from North-east

S. S.

over they fully grapple with the lighting problem; the great expense of building the eastern chapels to the full height of the church being compensated for by the flood of light obtained by the addition of a band of clerestory windows all round the east end. At Beverley the lighting was still further improved in the fifteenth century by substituting one vast window with rectilinear tracery for the original groups of lancets in the east wall of the eastern chapel; the same was the case at Worcester; in the latter the lancets have been replaced. At Beverley the difficulty of keeping the eastern altars out of the procession aisle is cleverly met by prolonging it one bay to north and south, so as to give it five instead of the usual three bays. Of the five bays thus provided the three central form the processional aisle, while each end-bay forms a chapel. In later days, *c.* 1489, another chapel was added, north of the central chapel; this also was clear of the processional path. It is one of the most compact and admirably arranged plans of the Middle Ages.

IV. CHEVETS WITH BOTH PROCESSION PATH AND EASTERN CHAPELS INTERNAL

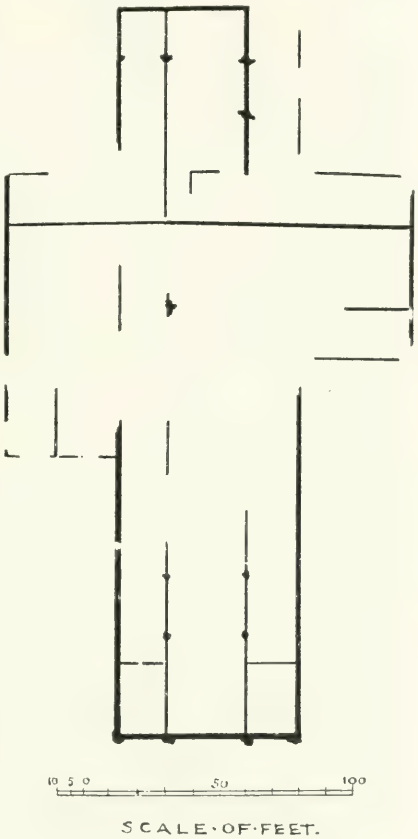
Much more often the projecting Lady chapel was trimmed off; or, to put it otherwise, the chancel aisles were prolonged eastward till they were flush with the east wall of the Lady chapel; and then eastern chapels were built to the full height of the church. This was the final and definitive plan of the Greater English church; its eastern limb became simply an aisled parallelogram. In the third and fourth groups of churches the architectural distinction between the procession aisles and the sanctuary had disappeared; now there ceased to be any architectural difference anywhere in the bays of the eastern limb of the church. Both externally and internally choir, sanctuary, feretory, procession aisle, and eastern chapels were all alike. In such a church as Salisbury, and to some extent at Beverley and Worcester, one can from far away see which is the procession aisle, and which the eastern chapels, but in such churches as Ely and Lincoln they are externally indistinguishable. Internally the several parts of the eastern limb were marked off by screens. Now that the screens have for the most part gone, this last group of churches presents us with the least interesting of English interiors; one takes in at a single glance the whole of the eastern interior of such a church as York minster or Carlisle cathedral; there are no vistas, no changing perspectives, no mystery. Externally, however, the effect of the long lines of the lofty roof prolonged unbroken, except for the central tower, from west front to east end is undoubtedly impressive, especially when, like Lincoln, the church is built on a high ridge (148).

The following is a list of the chief examples of this plan; in the last column is given the number of bays in the eastern limb:—

			Bays.
Salisbury (Old Sarum) cathedral	Secular canons	1115-1139	4
Winchester, St. Cross	Hospital church	*c.* 1165	2
New Shoreham (389)	? Secular canons	*c.* 1175	5
St. David's cathedral	Secular canons	1180 or 1220	4
Portsmouth, St. Thomas	Austin canons	*c.* 1185	? 3
West Langdon	Premonstratensian canons, founded in 1192, but aisles may have been added later		? 3
Hexham	Austin canons	*c.* 1195	6
Whitby	Benedictine monks	*c.* 1220	7
Jervaulx (137)	Cistercian monks	*c.* 1210	? 5
Coverham	Premonstratensian canons	1212	...
Boxgrove (41)	Benedictine monks	*c.* 1215	8
Bridlington?	Austin canons	*c.* 1225	...
Rievaulx	Cistercian monks	*c.* 1230	7
Netley	Cistercian monks	1239	4
Ely	Benedictine monks	*c.* 1240	9
Kirkham	Austin canons	*c.* 1240	8
London, St. Paul's (674)	Secular canons	*c.* 1255-*c.* 1283	12
Lincoln minster (137)	Secular canons	1255	10
Thornton abbey	Austin canons	1263	8
Tintern	Cistercian monks	1269	4
York, St. Mary's abbey	Benedictine monks	1270-*c.* 1290	8
Selby abbey (643)	Benedictine monks	*c.* 1280-1300	7
Ripon	Secular canons	*c.* 1290	6
Guisborough	Austin canons	*c.* 1309	?
Howden	Secular canons	*c.* 1320	6
Carlisle cathedral	Austin canons	*c.* 1322	8
York cathedral (154)	Secular canons	1361	9
Sallay or Sawley abbey	Cistercian monks	probably fifteenth century	5
Windsor, St. George's chapel	Secular canons	*c.* 1500	6
Bath abbey	Benedictine monks	*c.* 1500	3
Neath	Cistercian monks		?

The earliest example of this plan is Salisbury cathedral (Old Sarum), as to which William of Malmesbury, who was a contemporary, says, "Roger, Bishop of Salisbury (1107-1139), built anew the church of Salisbury, and beautified it in such a manner that yields to none in England, but surpasses many" (*Gestis Reg. Angl.*, Liber v. s. 408). Its foundations were distinctly visible through the grass

in 1834, a very dry year, and a plan of them was drawn by Mr Thatcher.[1] The fact that the next example in date, the hospital church of St. Cross, Winchester, *c.* 1165, is not very far away, is additional evidence to the correctness of the plan of Old Sarum. It is hardly likely that such a great innovation in plan should have arisen first in so small a church as St. Cross. Not far away is New Shoreham, whose eastern limb Mr Edmund Sharpe believed to be laid out *c.* 1175, and St. Thomas, Portsmouth, *c.* 1185. Far away in the west St. David's cathedral was built with an eastern limb of four bays, to which an external ambulatory was not added till later days. But it was in the North of England that the aisled parallelogram struck deepest root. Jervaulx sanctuary was set out *c.* 1210 with four bays: Hexham, Whitby, Kirkham, Rievaulx all rebuilt their eastern limbs in the first half of the thirteenth century. Then came a magnificent series of chancels — Boxgrove, Thornton, York St. Mary, Carlisle, with eight bays; Ely and York minster with nine bays; Lincoln, with ten bays; Old St. Paul's, with twelve bays.



Old Sarum, Wilts.

As to their geographical distribution, to the North of England belong Jervaulx, Hexham, Whitby, Coverham, Kirkham, Rievaulx, St. Mary York, Selby, Guisborough, Ripon, Howden, Carlisle, York minster, Sawley. To the Eastern counties belongs Ely. To the South belong Old Sarum, St. Cross, New Shoreham, Portsmouth, West Langdon, Boxgrove, Netley, Old St. Paul's, Windsor. To the West belong St. David's, Tintern, and Bath. To Mid-England

[1] This was reproduced in the *Gentlemen's Magazine* for August 1835, and, in a revised form, in the *Ecclesiologist*, vol. vii. 60, which remarks that "the general form of the church and the number and position of the pillars rest upon sufficient evidence."

G. H. T.

Ely Cathedral from South-west

belong Lincoln and Thornton. It is plain that the aisled parallelogram was as great a favourite in the North as the plans with low eastern chapels or low procession path and low eastern chapels were in the West of England. Another striking fact is the number of Cistercian churches which adopted this or substituted this instead of the normal Cistercian plan; no less than six chancels in the larger churches of this order were aisled parallelograms; viz., Jervaulx, Rievaulx, Netley, Tintern, Sawley, Neath.

In these churches all the usual ritual divisions were maintained, but were shewn only by screens. Thus in York minster the first two bays from the east contained the Lady chapel, with a flanking chapel to north and south; the third was the procession path; the fourth was the Saint's chapel (St. William of York); the fifth and sixth were the presbytery; the seventh, eighth, and ninth were the choir, where were the stalls. Room for the Lady chapel, procession path, and Saint's chapel was obtained by placing the High altar in the fifth bay west of the eastern wall of the church. These different divisions, except that between the choir and presbytery, were separated off by screens of wood or stone. Nothing could be more practical and straightforward than this final plan.

In Carlisle cathedral, as at York, the choir is placed in the chancel. The plan in Browne Willis' *Survey* (1727) shews the stalls occupying the three westernmost bays of the chancel; the next three bays form the sanctuary with the High altar; the next bay is the procession path; the easternmost bay no doubt contained three altars. In Old St. Paul's the choir and sanctuary occupied seven bays; the next two bays formed the feretory of St. Erkenwald; then came a procession path of one bay; the two eastern bays were assigned, as at York, to the eastern chapels; in Old St. Paul's, the central one was the Lady chapel, flanked to the north by the chapel of St. George and to the south by that of St. Dunstan; Hollar's drawing shews that these three chapels were separated from the procession path by a lofty screen running right across the church (5). At St. Albans the ritualistic divisions of the church are still easier to make out (123). At St. Albans the first ten western bays of the architectural nave formed the ritual nave, separated off as at present by the Rood screen. The next three bays, from the Choir screen to the central tower, contained the stalls and formed the choir. There was a double sanctuary. To the east, beneath the central tower, would be the sanctuary for the matins altar; the first two and a half bays of the chancel that for the High altar. The next one and a half bay contained as at present the shrine of St. Alban and was his Feretory (77). (At this point the roofs descend and the rest of the church is but one story high.) The next bay may have contained the shrine of St. Amphibalus (89). The next bay was the procession path. Last came an unaisled Lady chapel of three bays preceded by a vestibule of one bay with flanking altars. In Winchester cathedral the arrange-

ments are very similar to those of St. Albans, except that the stalls, since *c.* 1200, have been placed in the chancel, whereas in the Norman church they were placed in the nave and crossing.

C. F. N. York Minster: East End

IMPERFECT PLANS

V. The third group of churches, of which Salisbury is typical, all had an ambulatory distinct from the three or more eastern chapels external to it. But where there were not funds for so much accommodation, the church was built on a reduced

scale, with the side altars placed *inside* the ambulatory, not east of it. The following are the chief examples. None of them were originally cathedrals; Bristol and Manchester subsequently obtained cathedral rank:—

Bristol abbey (139)	Austin canons	1298-1341.
Binham priory	Benedictine monks	? Fourteenth century.
Wenlock priory	Cluniac monks	*c.* 1400.
Bristol, St. Mary Redcliffe	Parish church	*c.* 1470.
Malvern priory	Benedictine monks	*c.* 1450.
Manchester	Secular canons	1518-1535.

All the above have lateral aisles both to choir and presbytery. One bay west of the Lady chapel is placed the High altar. The bay at the back of the High altar serves as procession aisle. It also serves to hold two altars, one at each end.

VI. The next group of churches is planned like the last, except that what in those was an unaisled Lady chapel is now an unaisled sanctuary. The eastern limb, therefore, consists of aisled choir and unaisled sanctuary. Of this plan the special merit is that the sanctuary receives direct light from north, east, and south at once. Thus, in Rochester cathedral the sanctuary has in the ground story four windows on the north side, three on the east, and four on the south; moreover, it has upper windows also to the number of eleven. Thus the High altar, which originally was placed in the centre of the Rochester sanctuary, was admirably lighted. With such a sanctuary processions and pilgrims could not pass round the High altar: the fact, however, that a sanctuary without aisles was so well lighted may well have reconciled many to lessened processional convenience. At any rate, many important churches were built on this plan. The following is a list of the chief examples:—

Lastingham, Yorks.	Benedictine cell to Whitby	1078.	An aisled choir of three bays and an apsidal presbytery of one bay without aisles.
Oxford, St. Frideswide	Austin canons	1154-1180.	
Lanercost	Austin canons	consecration, 1169.	
Easby	Premonstratensian canons	*c.* 1180.	
Tynemouth priory (cell of St. Alban's)	Benedictine monks	*c.* 1195	(Eastern chapel added later).
Cartmel	Austin canons	1188.	
Rochester cathedral	Benedictine monks	*c.* 1200.	
Cambridge, St. Radegund (Jesus college)	Benedictine nuns	1225.	
Wimborne	Secular canons	*c.* 1220.	
? Repton	Austin canons	?*c.* 1172.	
Howden	Secular canons	*c.* 1265.	
Walsingham priory	Austin canons	*c.* 1330.	
Dorchester, Oxon. (257)	Austin canons	*c.* 1340.	

Castle Acre - - - -	Cluniac monks - -	*c.* 1340.
Finchale priory (141) - - -	Benedictine monks -	1364-1367.
Leiston, Suffolk - - - -	Premonstratensian canons removed here soon after 1389.	
Halesowen, Salop - - -	Premonstratensian canons.	

It will be seen that there is not a single large Benedictine abbey church in the list, nor any cathedral church, except one of the smallest, Rochester. On the other hand, it was evidently a favourite plan for the larger churches of the Regular canons, and to some extent of the Secular canons. In the North of England it includes Lanercost, Tynemouth, Finchale, Cartmel, Howden; in the East, Leiston, Cambridge, and Walsingham; in the South, Rochester; in the West, Llanthony and Wimborne; in the Midlands there are examples at Oxford,[1] Repton, Dorchester, and Halesowen.

There is considerable difficulty in differentiating this from the last group, for it is not always easy to say whether a projecting unaisled eastern limb is a sanctuary or a Lady chapel, especially as in some cases the High altar does not occupy its original position. Where the church was dedicated to St. Mary, as at Cartmel and Tynemouth, no separate Lady chapel being required, the eastern limb is probably a sanctuary. The original position of the High altar may sometimes be determined by the survival of its supports, *e.g.*, in the crypt of Rochester. And important sedilia are more likely to be a mark of a sanctuary than of a Lady chapel, *e.g.*, at Dorchester and Wimborne; but sometimes they have been removed from their original position; *e.g.*, at Southwell the sedilia formerly in the sanctuary are now in the Lady chapel, making it appear to be the sanctuary.[2]

At Oxford the Lady chapel is known to have occupied the second aisle north of the choir: at Rochester, at any rate in and after 1322, the Lady chapel was in the south transept.

VII. The next is a very important group of churches. In these the eastern limb is without aisles and is used solely as sanctuary. The choir occupies the crossing and one or more of the eastern bays of the nave. There are no chapels attached to the eastern limb; what chapels there are being confined to the east side of the transept. There is no procession aisle round the High altar. The merit of the plan is that the sanctuary and High altar are well lighted. The defects are the absence of a processional aisle and of eastern chapels. In several cases, *e.g.*, at Fountains and Rievaulx, the eastern limb was subsequently remodelled to provide them.

This plan—with short unaisled sanctuary—is especially noteworthy for its occurrence in so many Cistercian churches, viz., Waverley (1), Tintern (1), Quarr, Calder, Fountains (1), Louth, Dore (1), Buildwas, Furness, Kirkstall (161), Roche, Bindon,

[1] Oxford cathedral up to the Dissolution was the priory church of the Austin canons of St. Frideswide.

[2] See paper by the writer in *Journal* of R.I.B.A., 7th May 1910.

Cleeve, Strata Florida (125), Valle Crucis, Basingwerk, Sawley (1).[1] It is also the most common plan in the Premonstratensian churches of which we have knowledge, occurring at Easby, Shap, Dale, Alnwick, Blanchland, Eggleston, Torre, Bayham

J. E.

York Minster from North-west

(125). It occurs also in numerous churches of second or third rank belonging to other orders, *e.g.* :—

Lindisfarne priory	Benedictine monks	*c.* 1128.
Ewenny priory	Benedictine monks	1147.
Llanthony priory	Austin canons	*c.* 1175.
Brinkburn priory	Austin canons	*c.* 1175.
Nuneaton priory	Benedictine nuns	*c.* 1225.
Little Marlow	Benedictine nuns	...
Brecon priory	Benedictine monks	*c.* 1225.
Ulverscroft priory	Austin canons	*c.* 1275.

[1] It is the original plan of those churches marked (1): at a later date their chancels were remodelled.

VIII. The next and last group also has an eastern limb unprovided either with side aisles, eastern ambulatory, or eastern chapels, but well lighted. These churches differ from the last group in that there is crowded into the eastern limb the choir as well as the sanctuary. At this point the collegiate church and the parish church meet; for plainly the eastern limb of the collegiate church divided into choir and sanctuary is the same as the parish church chancel, which has precisely the same divisions. The collegiate church indeed often professes itself something more than parochial by transept and central tower. But many a parish church, too, had transept and central tower, and not unfrequently rivalled the collegiate churches in plan, area, and grandeur, *e.g.*, Patrington (62); and, on the other hand, many a church was collegiate only as regards its chancel. To this group belong churches, too numerous to mention, some served by Austin canons, others by Secular canons, or otherwise, *e.g.*:

Bolton, Yorks. (139) - -	Austin canons -	*c.* 1151; eastern limb prolonged *c.* 1330.	
Newark, Surrey - - -	Austin canons -	*c.* 1220.	
Maxtoke, Warwick - -	Austin canons -	-	1336.
Norton Subcourse, Norfolk (159)	... -	-	1387.

This latter is almost a *reductio ad absurdum* of a collegiate church. It was originally a parish church, with unaisled nave and short, narrow, unaisled chancel. When the college of chantry priests (*socii capellani*) was transferred to it in 1387 from Raveningham, all that was done to the church was to pull down the parochial chancel, and to substitute a longer chancel as broad as the nave for the stalls of the canons. This was frequently the case where the college was small; the parish nave was left untouched, merely a more spacious chancel was built. A magnificent example of this is the spacious aisled chancel of the collegiate church of Wingfield, Suffolk, with two windows in each bay of its clerestory, whereas in each bay of the nave clerestory there is but one.

PLANS OF CHURCHES OF CISTERCIAN MONKS

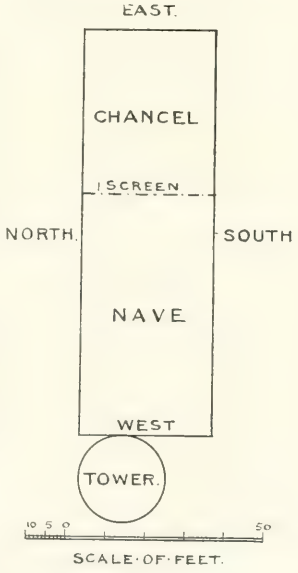
At this point we may leave the cathedral churches and the Greater churches generally of the monastic orders and examine separately the churches of those religious orders whose planning is more or less peculiar and characteristic. The most important are the churches of the Cistercians.

The famous order of the Cistercians, like that of the Cluniacs, was an off-shoot of the Benedictine. The order was founded in 1098, and within fifty years of its foundation numbered 500 abbeys in Europe. So rapid was the multiplication of Cistercian abbeys that a statute was promulgated in 1152 forbidding the foundation of more abbeys—a rule subsequently broken frequently. By the middle

of the thirteenth century there were 1,800 Cistercian abbeys, the majority of which were founded in the twelfth century. The daughter-churches of Citeaux were four, viz.: La Ferté, Pontigny, Clairvaux, and Morimond; all four were founded between 1113 and 1115. These in turn sent out colonies, each of which remained dependent in a large measure on the mother-church. The first colonies in each country were as follows:—

Western France, Cadouin, 1119; Germany, Alten Kamp, 1123; England, Waverley, 1128; Italy, Fossanova, 1135; Portugal, Toronca, 1140; Spain, Mousalud, 1141; Sweden, Alvastra and Nydala, 1143.

Of the Cistercian plans the earliest in England, and by far the most common, is that with short aisleless sanctuary, as at Kirkstall; it was originally the plan of Fountains and Dore, before those churches received eastward extensions (161). The transept has one, two, or three rectangular chapels on the east side of each arm, which are separated from one another by solid walls. This is the most common plan throughout Europe, and may well be the plan of the second church built by St. Bernard at Clairvaux in 1135, except that at Clairvaux the transept had chapels on the west as well as on the east side of the transept. It corresponds with the plan of the group of churches described above (p. 156). Before 1150 it was common in Southern and Western France, and in the monasteries founded by St. Bernard in Italy. Examples in France are Fontenay, Noirlac, Vaux-de-Cernay, Hauterive; in Italy, Fossanova, Casamari, Chiaravalle, near Milan, and Chiaravalle, near Ancona; in Spain, Santas Creus; in Germany, Maulbronn, Eberbach, and Arnsburg; in Denmark, Sorö; in Sweden, Alvastra.



Norton Subcourse

In England it appears in the very first church built by the Cistercians, that of Waverley, Surrey, founded 1128, which Mr Harold Brakspear has proved to have been a church with aisleless nave and aisleless rectangular sanctuary and with a transept containing only one chapel in each arm.[1] Mr Brakspear is of opinion that this was the plan also of the first church

[1] In the plan (133) the nave of the old church is shewn to have been occupied later by the north walk of the cloister, and its presbytery by the two northern chapels of the south transept; its two transepts correspond roughly with the south transept of the thirteenth-century church.

of Tintern, founded two years later. The following is a list of the chief examples :—

	Number of Chapels in each Arm of the Transept.
Waverley, Surrey (1st church), founded 1128	1
Tintern (1st church), founded 1131	1
Quarr, Isle of Wight, founded 1131	3
Calder, Cumberland, founded 1134	2
Fountains (1st church), founded *c.* 1132	2
Louth Park, Lincolnshire, 1139	3
Dore, Hereford (1st church), founded 1147	2
Buildwas, Salop, *c.* 1148	2
Furness, Lancashire, soon after 1148	3
Kirkstall, Yorks., 1152 (161)	3
Roche, Yorks., *c.* 1165	2
Bindon, Dorset, 1172	2
Cleeve, Somerset, founded 1188	2
Strata Florida, Cardigan, 1166-1203 (125)	3
Valle Crucis, Denbigh, *c.* 1200	2
Basingwerk, Flint, *c.* 1225	2
Sallay, or Sawley, Yorks. (1st church)	2

The second type of English Cistercian plan corresponds with that of the group of churches described on p. 146, *e.g.*, it appears at :—

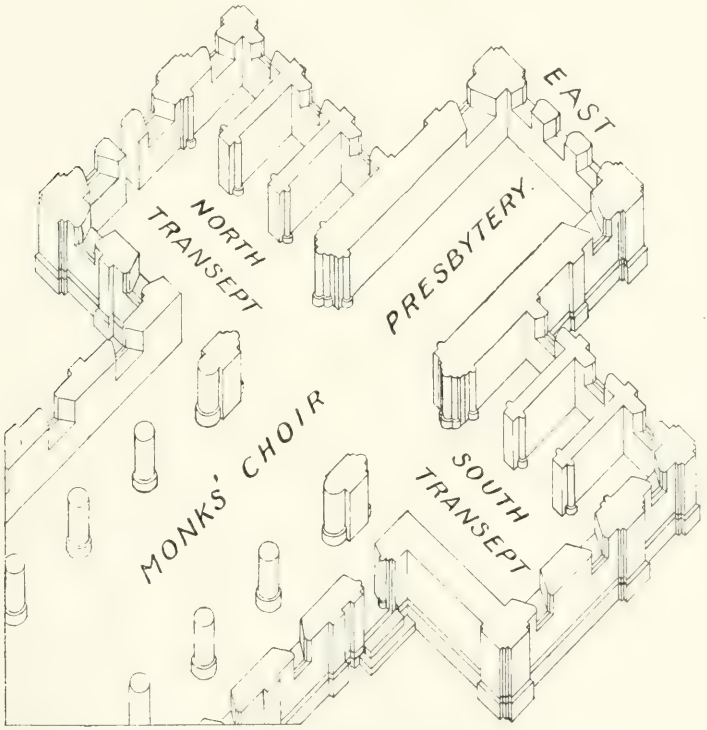
Byland, *c.* 1170, three arches from sanctuary, five chapels.
Waverley (2nd church), 1203, three arches from sanctuary, five chapels (133).
Hayles (1st church), 1246-1251, three arches from sanctuary, five chapels.

In all three the sanctuary has full-length aisles on either side, and at the back of the high eastern wall there are five low rectangular chapels, all of the same depth. The High altar was placed, as was proved at Waverley by the foundations of its reredos, one bay west of the east wall of the sanctuary. Thus the easternmost bay of the sanctuary at once served as a processional aisle, and provided access to the eastern chapels. It may be contended that the plan is of English origin ; for it appears in the eleventh-century cathedral of Hereford, except that there the original eastern chapels were apsidal, and were three, not five, in number, and that there is only one arch in the eastern wall of the sanctuary. But this plan appears on the Continent also ; so we cannot insist on an English origin for it.

The third type of plan corresponds with that of the churches grouped together on p. 140 ; it is closely allied to the second type of Cistercian plan ; the difference being that the eastern extension is deepened so as to contain not only a row of eastern rectangular chapels, but west of them the processional aisle, which in churches of the second type had been west of the east wall of the sanctuary. At Dore, where this arrangement survives intact (except for the loss of the low walls between the little chapels), each chapel seems to have had originally its own separate gabled roof, as in Southwark cathedral. We have but two examples :—

Dore, *c.* 1200, three arches from the sanctuary, five chapels (11, 60).
Fountains (2nd church), 1210-1247, one arch from the sanctuary, nine chapels (127, 10).

The chapel of the Nine Altars at Fountains, which was copied a few years later in the Benedictine cathedral of Durham, is but an extension of the Dore ambulatory and eastern chapels two bays further to the north and two bays further to the south, so as to give nine instead of five chapels. The temptation is strong to ascribe an English origin to the plan of Dore. For long before Dore was set



R. A. D. Typical Cistercian Plan

out it occurs in the church of the Benedictine nuns at Romsey ; and it was the plan adopted in Hereford cathedral by the Secular canons, 1186-1199. Probably the Benedictine abbey of Glastonbury had a similar termination when rebuilt after the fire of 1184. And after this it became the favourite plan for the Greater churches throughout the West of England as well as at Winchester, Southwark, St. Albans, and Salisbury. On the other hand, this plan is precisely that of a Cistercian

church shewn in the Sketch Book of Villard de Honnecourt; and of Cistercian churches such as Ebrach and Riddagshausen, the choir of the former of which was consecrated in 1178, and the nave in 1186, both before Dore choir was remodelled. Moreover, it is supposed to have been the plan of the first church of Pontigny, which was not remodelled till *c.* 1180.

The fourth type of plan appears at:—

Croxden, Stafford, said to be *c.* 1190 (119).
Beaulieu, Hants, founded 1204, church hallowed 1246 (119).
Hayles, Gloucester, remodelled 1270-1277.

All three have a semicircular aisle encircling a semicircular apse, and from the ambulatory radiate five or more apsidal chapels.[1] The plan of Beaulieu is Cistercian throughout, being undoubtedly derived from the eastern extension at Clairvaux, which was consecrated by the Bishop of Langres in 1174. Clairvaux, again, has been regarded as an expansion and improvement of the Burgundian cathedral of Langres, which probably dates between 1150 and 1175. This magnificent plan occurs here and there in the greater Cistercian churches throughout Europe, *e.g.*, Maestricht, Heisterbach, Veruela. Croxden and Hayles had periapsidal plans, but not of Cistercian type; they are merely examples of such a normal French periapsidal plan as is seen in Westminster abbey.

But the fifth type of plan is not in any sense Cistercian; it is purely English. It is the plan of the aisled parallelogram, which produced the vast eastern limbs of Kirkham, Lincoln, Ely, York, St. Paul's. It was especially common in the North of England.

Cistercian examples are:—

		Bays in Eastern Limb.
Jervaulx (137)	*c.* 1180	4
Rievaulx	*c.* 1230	7
Netley	1239	4
Neath	*c.* 1240	4
Tintern	1269	4

And Sawley, whose presbytery was probably remodelled in the fifteenth century.

With the exceptions of the churches in the last group, and those of Croxden and Hayles, it is, on the whole, likely that all the Cistercian plans in England were drawn from one or other of the mother-churches in Burgundy. One reason for this is that the daughter-abbeys of the Cistercian churches were not independent of one another like those of the Benedictines. Moreover all were, in principle, subject to a periodical visitation carried out directly from or on behalf of the

[1] For Croxden reference should be made to the monograph by Mr Charles Lynam; for the last two churches to monographs by Mr Harold Brakspear.

mother-abbey.[1] Thus from first to last there was kept up a regular intercourse and communication with Continental architecture, which in the case of the English Benedictines did not exist. Moreover, the Cistercians were constrained, far more than any other order, to work with their hands. Instead of study, as with Benedictines and Cluniacs, they were enjoined manual labour. They worked so much at building, especially the *fratres conversi*, that they must have known far more about planning and building construction than Benedictines or Cluniacs; and no doubt frequently learnt to take a genuine interest and pleasure in the operations of building. We hear of "*conversi barbati diversis artibus periti*" being lent to abbeys about to build. St. Bernard is recorded as sending Frater Achard, master of the novices at Clairvaux, to many French and German abbeys in order to direct the erection of their buildings. In Italy the first Cistercian abbey, Fossanova, between Rome and Capua, rebuilt 1187-1208, is thoroughly Burgundian; no Italian architect could have designed it. The next Cistercian church built in Italy was Casamari, which is also Burgundian. The great church of San Galgano, in Tuscany, 1208, is an exact reproduction of that of Casamari; it was built by Frater Conversus Ugolino di Maffeo, Frater Petrus *operarius*, and Frater Matheus *magister operis lignaminis*. The accounts of Siena cathedral shew that the *operarius* there was Frater Vernaccio in 1259, and in 1260 Frater Conversus Melano, and that both of them were from San Galgano.[2] A chronicle relates that in 1124 Wigbold, the Cistercian abbot of Aduard in the diocese of Groningue, wishing to rebuild his church, sent a lay brother *to sketch the plan and details of Cîteaux*, which he wished to reproduce with the greatest possible exactness.[3] "At Duns, in Flanders, it is recorded that the Cistercians not only designed but worked at the building of their church." "There is evidence that the Abbot of Beaulieu, Hampshire, got from Rouen a certain Durandus, who was a mason there from 1214 to 1254. He was imported, no doubt, to work out the construction of the polygonal chevet, which would be strange to an English mason."[4] We may conclude without hesitation that the planning of all English Cistercian churches built before *c.* 1180, and occasionally even later than that, was based on Burgundian models.

[1] It would appear that the visitation of Cistercian abbeys in England was not always either very strict or very thorough. The fact that towards the end of the thirteenth century Fountains abbey got so badly into the hands of the Jews that the Crown had to take matters into its own hands and appoint an official receiver, seems to indicate that visitation was slack. In York diocese in the fourteenth century the archbishop seems to have had a general commission to admit new abbots of Cistercian houses, which shews that the mother house had relaxed her hold on the houses of this part of England.—A. H. T.

[2] Enlart's *Gothique en Italie*, pp. 13 and 157.

[3] *Bulletin Monum.*, 1874, p. 216.

[4] Prior, *Gothic Art in England*, 141.

CHURCHES OF THE PREMONSTRATENSIAN OR WHITE CANONS

These churches were served by colleges of priests living a common claustral life under a Rule. Of the Canons Regular they were the strictest and most ascetic. They seem to have resembled the Cistercian monks, except that they were priests, whereas the Cistercians, originally at any rate, were nearly all laymen. Their churches also very frequently are Cistercian in plan, except that in England they seldom have an aisled nave. But that may simply be because they are on a smaller scale than those of the Cistercians. The great church of St. Martin, Laon, is aisled, and is thoroughly Cistercian in plan and elevation. Their first house in England was built in 1140 at Newhouse, in Lincolnshire; they had thirty-six houses in England. The abbot of Prémontré was abbot-general of the whole order; hence uniformity of plan. In 1512 their English houses were placed under the abbey of Welbeck, Notts. There were about thirty-four Premonstratensian houses at the Dissolution. As in the Cistercian churches, none but guests and servants were admitted to the services, and none of their churches were parochial. All they required, therefore, was a sanctuary and two choirs, one for the canons and one for the *fratres conversi* or the servants. In the churches remaining in England the following eight have a rectangular unaisled eastern limb and transepts with rectangular chapels on the east of each arm, *e.g.*, Bayham (125). They frequently have chapels north or south, or on both sides of the western bays of the eastern limb, separated from it by solid walls more often than by an arcade. The eastern limb is usually much more elongated than in a Cistercian church, *e.g.*, at Easby. When it is short, it is probably sanctuary only. When elongated, it must sometimes have been both choir and sanctuary, *e.g.*, at Dale the pulpitum, which closed in the choir stalls at the west, was beneath the eastern arch of the crossing. The following are the eight churches referred to above:—

Easby, St. Agatha *juxta* Richmond	*c.* 1180.
Bayham	*c.* 1190.
Torre, Devon	1196.
Shap, or Hepp, Westmorland	*c.* 1200.
Blanchland, Northumberland	*c.* 1200, founded 1167.
Dale, Derbyshire	*c.* 1225.
Alnwick, Northumberland	Founded 1147.
Eggleston, Yorkshire	*c.* 1250.

St. Radegund's, Bradsole, Kent, differs from the above in that the unaisled sanctuary is so much elongated as to provide an eastern Lady chapel. At Halesowen, Worcestershire, the eastern limb is said to contain an aisled choir and unaisled sanctuary. Thus it resembles the group of churches to which belongs Rochester cathedral, *c.* 1200. At West Langdon, Kent, the eastern limb is an aisled parallelogram, as at York, Tintern, and Ely. The most important remains

are those of Bayham, Sussex, where there was built just before 1200 a church of normal Cistercian plan, but with unaisled nave. To the east of this was added, *c.* 1300, another Cistercian transept and presbytery.

CHURCHES OF GILBERTINE CANONS

These were Canons Regular of an order founded by St. Gilbert, Rector of Sempringham, Lincolnshire, about 1139. It was usually a dual order. The canons' house and the nunnery were some distance apart, but there was one church for both, divided down the middle by a solid wall. A good deal of the nunnery survives at Chicksands, Bedford. At Watton, East Yorkshire, the foundations of the whole establishment have been excavated; the church was an unaisled parallelogram with Cistercian transepts: in addition, the canons had a chapel of their own. Some Gilbertine houses, however, were convents of men only; *e.g.*, Malton.

CHURCHES OF CARTHUSIAN MONKS

This monastic order was founded in 1086 by St. Bruno at the Grand Chartreuse, near Grenoble. Of their houses the most magnificent is the famous Certosa near Pavia. The first English house was founded in 1180 at Witham, Somerset, by King Henry II. At the Dissolution there were only about a hundred Carthusian monks in England, distributed among eight monasteries. None of their churches were parochial. The most extensive remains are those of Mount Grace priory, Yorkshire, where excavations have revealed the arrangement of the monastic buildings. At Witham, in Somerset, from which St. Hugh passed to the bishopric of Lincoln, the parish church may be the chapel of the Lay brothers; it is a vaulted aisleless church, with apsidal east end, 1176-1186. The church at Mount Grace, built soon after 1397, is planned like a Friars' church (171), *i.e.*, the nave and presbytery are oblong and without aisles, and separated by a passage, in the centre of which was a central tower just as originally at St. Andrew's Hall, Norwich. Some portions of the London Charterhouse exist.

CHURCHES OF THE AUSTIN (AUGUSTINIAN) OR BLACK CANONS

The Austin Canons, like the White Canons and the Gilbertines, were priests, and, like them, lived a claustral, common life. But they were less confined to the cloister than any other order of Canons Regular or monks. Their first foundation in England was at St. Botolph, Colchester; soon after 1100. According to the *Monasticon*, they possessed 218 churches.[1] Four of their churches in Carlisle, Bristol, Oxford, and Southwark are now cathedrals.

[1] Abbot Gasquet writes that at the Dissolution there were about 170 houses of Augustinian canons in England; two of them, Waltham Cross and Cirencester, governed by mitred abbots.—*English Monastic Life*, 225.

Of their churches about 180 were purely conventual, and most of these have perished, or are in ruins; *e.g.*, Blythburgh, Cirencester, Guisborough, Haughmond, Lilleshall, Llanthony, Newark (Surrey), Newstead (Notts.),[1] Oseney, Repton, Leicester, Thornton, Walsingham; some great churches, however, remain in use, *e.g.*, Bolton, Hexham, Lanercost, Thurgarton. Thirty-seven of their churches were both conventual and parochial, and have consequently for the most part survived, *e.g.*, Bourn, Bridlington, Cartmel, Dorchester, Dunstable, Christchurch, Hants, Waltham, Westacre, Worksop.[2]

Many of their establishments were on quite a small scale, and both choir and sanctuary were accommodated in an unaisled eastern limb in parochial fashion, *e.g.*, at Bolton, Lilleshall, and Maxtoke. A more advanced plan, following perhaps Cistercian usage, constructs a short unaisled eastern limb to serve as sanctuary, the choir being accommodated further west. The plan of Brinkburn, with its fine chancel of three unaisled eastern bays, is almost as Cistercian as that of Kirkstall. Most of their smaller churches originally had aisleless naves, but frequently an aisle was added to that side of the nave where extension was not obstructed by the cloister, *e.g.*, Bolton (139).

Many of these last churches had a lateral chapel or lateral chapels, separated from the choir by solid walls. It was only necessary to substitute an open arcade or arcades for these solid walls to arrive at the more advanced and popular plan of the aisled choir and unaisled sanctuary, which is seen in Oxford cathedral, Lanercost, Llanthony, Cartmel, Newark, Repton, Dorchester, near Oxford (257); as well as in many parish churches; *e.g.*, Lowestoft and Southwold (193).

The above three are the most characteristic plans of the churches of the Austin canons, except those of exceptional importance and size. When the establishment was on a large scale, the church frequently took the plan of the larger abbey churches or cathedrals. (1) At Bristol the present cathedral has aisled choir and presbytery, ambulatory containing lateral altars, and projecting Lady chapel. (2) At Portsmouth, Hexham (1195), Kirkham, Thornton, Guisborough, Carlisle, the eastern limb is an aisled parallelogram, as at York minster. (3) Southwark cathedral and Hexham (1350) had the West of England plan, with external ambulatory and eastern chapels. (4) St. Bartholomew's, Smithfield, has the peri-apsidal plan of Gloucester and Norwich.

CHURCHES OF SECULAR CANONS

More ancient than any of the orders of monks or of Canons Regular were the colleges (*collegia*, *i.e.*, corporate bodies) of Secular canons. They differed from the

[1] On Newstead abbey see paper in *Memorials of Old Nottinghamshire*.

[2] See Rev. J. F. Hodgson, "On the Alleged Difference of Plan of Churches of Austin Canons and Monks," in the *Archæological Journal*, xli. 374; xlii. 96, 215, 331, 440; and xliii. 53, 290, 403.

monks in being priests, and both from monks and Canons Regular in that they did not live a claustral life. Nor did they, like the others, lead a communistic life; they had private property. In the eyes of the "religious," *i.e.*, the monks and Canons Regular, both the canons of collegiate and cathedral churches and the parish clergy were regarded as being of inferior status. What has been said of the churches of the Austin canons is true, *mutatis mutandis*, of the collegiate churches of the Secular canons. Several were cathedral churches; a few others were of such importance as to adopt cathedral plans, *e.g.*, Beverley, Ottery, Manchester, Ripon, Howden, Windsor. Few, however, seem to have adopted the plan which was so much in favour with the Austin canons, viz., an aisled choir and an unaisled sanctuary; but both the smaller plans of the Austin canons, viz., an unaisled eastern limb containing sanctuary only or sanctuary and choir as well, were frequently adopted in the smaller collegiate churches.

CHURCHES OF THE FRIARS

The various orders of friars did not arrive till the thirteenth century. They differed from the monks in the fact that they did not live a cloistered, common life. They were itinerant, living anywhere where there was distress of soul or body, and travelling about freely. For their sustenance they relied on alms, and so were mendicants. After a time, however, they came to possess corporate property, and their houses and churches vied in size and splendour with those of the monastic orders.

CHURCHES OF DOMINICANS OR BLACK FRIARS

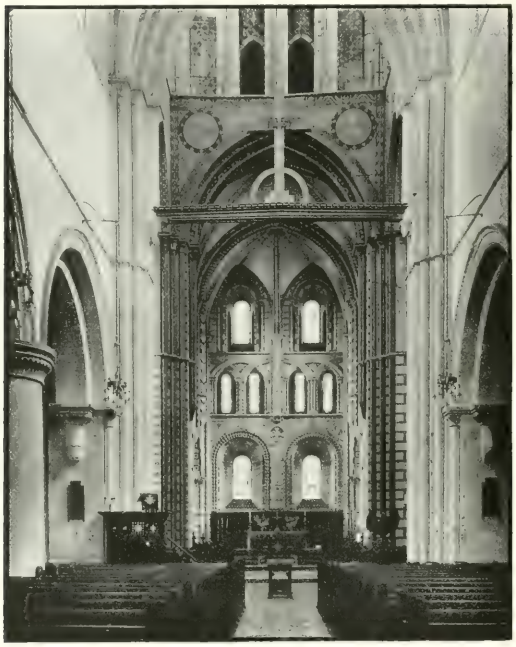
The Dominicans or Black Friars date from 1215; they arrived in England in 1221. The order was instituted by St. Dominic to oppose heresy; so they became known as Preaching Friars. They had fifty-eight houses in England at the Dissolution. At Cardiff the plan of the Black Friars' church shews an unaisled eastern limb containing choir and sanctuary, and an aisled nave of four bays. At Norwich the ancient church of the Black Friars survives as St. Andrew's Hall, where the musical festivals are held. It consists of an unaisled eastern limb, 100 ft. by 32 ft., containing choir and sanctuary: aisled nave of seven bays, with passage east of it formerly surmounted by a hexagonal central tower; it was built between 1440 and 1470. Bristol, Gloucester, and King's Langley, Herts., possess fragments of Black Friars' churches.[1]

CHURCHES OF FRANCISCANS OR GREY FRIARS

The Franciscans, Grey Friars or Minorites (*i.e.*, Little Brethren) date from 1210; they arrived in England in 1224. The order was instituted by St.

[1] On the churches of the Black Friars see C. A. Buckley in "Ecclesiology," extracted from the *Gentleman's Magazine*, pp. 294-307.

Francis of Assisi. At first their work was largely in the slums of the towns, but they soon became famous as preachers also; and the churches both of Dominicans and Franciscans were accordingly arranged so as to be one half preaching house and the other half the private chapel of the Friars; the two parts being in England often separated by a passage, over which was a central tower.[1] Christ Church, Newgate Street, London, where till recently was Christ's Hospital, probably consisted of two aisled parallelograms separated by a passage, as in the Black Friars' Church, Norwich, with six bays in the nave and seven in the choir. Winchelsea has the ruins of an unaisled parallelogram with eastern apse. At Chichester the "Guild Hall" is the desecrated chancel of the Franciscan church (15). At Gloucester the chancel is left; at Richmond (20) and King's Lynn the central tower; at Coventry the tower and spire; at Denney, Cambridge, are remains of the house of the Minoresses of St. Clare. At Walsingham, Norfolk, are extensive fragments of the house; the church has disappeared.



St. Cross

CHURCHES OF CARMELITE FRIARS

Other orders were the Minoresses, Carmelites, and Austin Friars. The Minoresses or Poor Clares were a Franciscan order founded by St. Clare, the friend of St. Francis; they had a house in the "Minories," near Aldgate. The Carmelites differed from the rest in adopting an eastern code, that of St. Basil. Several orders of friars were gathered together in 1265 under the name of Austin Friars. There were also other minor orders of friars.

Of Carmelite churches the most important remains are at Hulne, near Alnwick, Northumberland, *c.* 1240. Both nave and eastern limb were oblong and without

[1] This arrangement is well seen in the churches of the Austin Friars at Callan and Quin, Ireland (171).

aisles, and were separated by a passage. At Aylesford, Lynn, and Gloucester also fragments of Carmelite churches survive.

CHURCHES OF AUSTIN FRIARS

Important remains of a church have been excavated at Ludlow, Salop. The friary was founded between 1252 and 1282. The church consisted of a long unaisled eastern limb, and nave of six bays with north aisle. The nave was

I. F. H St. Cross, Winchester, from North-west

separated from the chancel by a passage containing the base of some octagonal building. In London the nave of Austin Friars is now the Dutch church in the City. At Clare, Suffolk, the church was a long aisleless parallelogram. At Rye, Sussex, the friars' church is now a Salvation Army barrack.

CHURCHES OF THE KNIGHTS TEMPLARS

By way of concrete expression of their mission, the Templars built their churches circular, like the church of the Holy Sepulchre at Jerusalem. Their chief house

was the Temple, London, where their church remains; the circular nave was consecrated in 1185 and the chancel in 1240; subordinate to the London house were about twenty-three "preceptories" or cells (17, 18).

CHURCHES OF THE KNIGHTS HOSPITALLERS

This order also preferred churches circular on plan, and for the same reason. Their chief house was St. John's, Clerkenwell; subordinate to it were about fifty-three "commanderies" or cells. One church of this order survives; that of St. John of Jerusalem at Little Maplestead, Essex (16).

The round church in Ludlow Castle, Salop, was the chapel of the castle; those of St. Sepulchre, Northampton (9), and St. Sepulchre, Cambridge, as their dedications shew, follow the precedents of the Templars and Hospitallers; both, however, were parochial: so also Thurrock church, Essex, where the foundations of a circular nave west of the church have recently been identified by Mr George Clinch.

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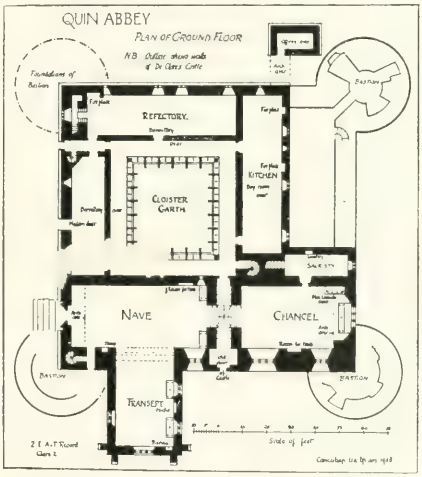

C. O. P.

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ILLUSTRATIONS OF THE GREATER CHURCHES

Durham Cathedral (175).—In front is the low Galilee or Lady chapel on the edge of the steep cliff above the River Wear. Behind is seen the Norman façade, in the centre of which is a big window inserted in the fourteenth century. To the right is seen the ancient dormitory of the Benedictine monks, now containing the library and Canon Greenwell's collection of pre-Conquest sculptured crosses, "hogbacks," etc.

Ely Cathedral (152).—On the left is seen the western tower and western transept. For the western tower and transept, see p. 65. Then comes the long Norman nave; then the Norman transepts, and over the crossing the octagonal wooden lantern erected after the fall of the Norman central tower in 1322; the upper story of the lantern is modern. To the right is what was formerly presbytery, procession path and St. Etheldreda's chapel: compare pp. 573, 574, 575.

This photograph (65) shews the south side of the nave; the windows of the triforium chamber have been enlarged to improve the lighting. East of the south arm of the western transept is a little apsidal chapel.

Peterborough Cathedral (136).—On the left is seen the thirteenth-century façade; see pp. 64 and 670; on the south is a gable reminiscent of that of Lincoln minster (670). Then comes the long Norman nave, in front of which is the Bishop's palace. Then come the Norman south transept and the central tower, which has recently been rebuilt. Compare p. 138.

Christchurch, Hampshire, from north-east (45).—This was the church of a house of Augustinian canons. To the right, on the other side of the River Avon, are the ruins of a Norman house. The church consists of a western tower added in the fifteenth century; a nave, of which the two bottom stories are work of the twelfth, and the top story work of the thirteenth century; a Norman transept; an aisled presbytery and procession path without a parapet; and an unaisled Lady chapel. Over this last is St. Michael's loft or chapel; it was usual to place St. Michael's chapel on high; that at Le Puy occupies the sharp summit of an aiguille of volcanic rock. See also pp. 395 and 739.

St. Georges de Boscherville, Normandy (31).—On the left is the central apse, round which there is *not* a procession path; west of this is a short aisled presbytery of two bays; then comes the crossing, which is crowned with a central tower and spire. To the right is the

unaisled north transept ; projecting from which to the east is a little apsidal chapel.[1] Lessay is similar in plan ; in both the presbytery aisles are square to the east (121) ; sometimes they were square externally, but semicircular internally, as at St. Albans (123) and St. Mary's, York (122). This is how many of our Greater churches must have looked in the twelfth century ; *e.g.*, Durham, Peterborough, Selby : not one retains now the elevation of the east end complete.

Tewkesbury Abbey.—This, like Gloucester, was periapsidal ; *i.e.*, had a procession path round the apse and radiating chapels ; this disposition was retained when the presbytery was remodelled in the fourteenth century. From the south-east (42) is seen to the left the south transept ; it was originally joined on to the group of monastic buildings east of the cloister ; to the east of the transept projects a small Norman apsidal chapel, as at St. Georges de Boscherville (31). Then come two Gothic chapels projecting from the procession aisle of the presbytery, the clerestory windows of which are seen behind ; above them is a fine parapet (852). Transept and presbytery have lost their high roofs ; but their weatherings remain. From the north-east (44) one sees that the Lady chapel has been demolished ; between the present east end and the presbytery is the procession path ; on the right are two Gothic radiating chapels ; to the right of the tower is the north transept ; its little apsidal eastern chapel has been replaced by large Gothic rectangular chapels.

Romsey Abbey, Hants (46).—On the left is a glimpse of the nave, the western bays of which were not built till the thirteenth century (571). Then comes the Norman transept, with a little apsidal chapel to the east, as at Tewkesbury (42) and Christchurch (848). Then comes the aisled Norman presbytery, early twelfth-century work ; and it is to be particularly noticed that the aisle runs round the east end, as the plan shews (121). Eastward from the procession aisle formerly projected centrally a large rectangular chapel.

Hereford Cathedral (87).—On the left is seen the Lady chapel, *c.* 1230 : the doorway leads to a charnel house beneath. Between the Lady chapel and the high chancel is a procession aisle with eastern chapels, which is projected north and south so as to form a low eastern transept ; see plan on p. 129. The eastern bay of the chancel was probably the Feretory, and the rest of it presbytery (744). To the right of the central tower is the north transept with an eastern aisle, built *c.* 1260.

York Minster (157).—On the right is seen the aisled nave ; it has been recently supplied with flying buttresses, though the high vault is only a wooden ceiling ; the nave was built between 1291 and 1324. The central tower was added between 1400 and 1423 (891). The north transept, with the famous Five Sisters, was built between 1241 and 1260 (176). The polygonal Chapter house is probably *c.* 1300 (157) ; its vestibule, seen on the right, was added but little later. Over the latter is a glimpse of the presbytery, 1361-1370.

Wells Cathedral (142), fair beyond compare.—On the right, in the foreground, is the Lady chapel, finished before 1326 (73). Behind it is the polygonal Chapter house, built between 1306 and 1319. The Lady chapel expands twice to the west, forming, as the plan shews (131), an antechapel and a low eastern transept (22). The latter is well seen in the other illustration (142). Then comes the aisled presbytery, rather later than the Lady chapel, with *external* flying buttresses, and the choir, *c.* 1180, with *internal* ones. Next is a double-aisled south transept, *c.* 1200. To the left is seen the south-western tower (903), which was built after 1386 ; to the right of it is a bit of the façade. The central tower was built *c.* 1321, and was remodelled in the fifteenth century.[2]

[1] Compare the exterior of Cérisy-la-Forêt in *Gothic Architecture in England*, 160.

[2] See Sir Charles Nicholson in *Journal of Royal Institute of British Architects*, 27th July 1911.

Lincoln Minster (148).—To the right of the west towers is seen a small portion of the west front; to the east of the towers is the nave; then the central tower, the upper stage of which was built in 1307; and the north transept, *c.* 1210. The curious gabled turret is part of the façade of the vestibule to the polygonal Chapter house, 1220-1235; east of the central tower is the choir, 1192; then comes the north-eastern transept, 1192; then the Feretory, procession path and eastern chapels, 1256-1280; see plan on p. 137. On the right, near the new library buildings, is a bronze statue of Tennyson, a native of Lincolnshire.

In Mr Bidlake's drawing (51) part of the west front is seen on the left; in the foreground is the south-west chapel of the nave, used as Consistory court; on the right is the nave, *c.* 1230, with a high parapet and pinnacles added *c.* 1330. The lower part of the west towers is twelfth-century work; the upper stages seem to have been added soon after 1380.

Beverley Minster, Yorkshire; loveliest of English minsters (7).—To the right are the west towers, probably built soon after 1416; east of them is the nave, *c.* 1340; then the north transept, choir, north-eastern transept, presbytery, procession path and eastern chapel, all built *c.* 1230; in the east front is a large window inserted in 1416.

The west window of the nave (6) is of the same design as the east window of the chancel; we may therefore fix the date of the façade at *c.* 1416. East of the west towers is the nave, and then the south transept, which, like Wells and York, has double aisles. For an illustration of the interior see p. 776.

Ottery St. Mary, Devon (8).—This church was made collegiate by Grandisson, Bishop of Exeter, and seems to have been almost wholly rebuilt; the work starting *c.* 1337. Like Exeter cathedral, it has transeptal towers. The drawing shews the west front of the nave and aisles, and the south porch. The Dorset aisle on the left, which contains a fine fan vault, was not added till *c.* 1520.

The photograph shews the transept with its towers, the aisled chancel, and unaisled Lady chapel (28). Like Hereford, Wells, and Exeter, it has low eastern transepts; the south-eastern transept is seen on the left. Owing to the partiality of the architect for groups of lancets, much of this church is often assigned to the first half of the thirteenth century. The north-east transept was the treasury; the south-east the sacristy.

Old St. Paul's, London, destroyed by fire in 1666.—As Mr Ferrey's sketch shews (4), there is a long nave, a very long double-aisled transept, and a long chancel of the type of those of Ely, Lincoln, and York. To the south of the west front was the parish church of St. Gregory, marked 1 on the plan. To the west of the south transept was the polygonal Chapter house, which was encircled by a small cloister. The plan should be compared with the longitudinal section of the chancel (5). In the latter the lower bays of the crypt indicate how far the chancel extended in 1240; it was prolonged between *c.* 1255 and *c.* 1283 so as to contain twelve bays. Of these the three western, as usual, contained the stalls and formed the choir; the next bay east is also on the same level with and formed part of the choir; after the Reformation there was a pulpit here. The next three and a half bays, commencing at the broad bay, formed the presbytery. In the broad bay were the *ostia presbyterii*; the northern of these doorways is seen in the section. In the half bay was the High altar, leaving the two narrow bays to the west free for the celebrant and servers. At the back of the High altar was the shrine of St. Erkenwald (54); the next one and a half bays therefore formed the Feretory. The third bay from the east formed the procession path. The two easternmost bays formed chapels, and were separated off by tall screens (shewn in another of Hollar's drawings), which extended across the church; these

I. R. E

Durham Cathedral from South-west

screens are shewn in the plan; in the section the height of the screens is shewn against the second pier from the east. Like the chancel, the nave had twelve bays. Each transept had five bays. According to Mr Ferrey,[1] Old St. Paul's had a length, including the end walls, of 596 ft., and the breadth at the transepts was 290 ft.; the breadth from aisle wall to aisle wall was 104 ft. (including the walls); the height of the vault of the nave was 93 ft., and that of the choir 101½ ft.; externally, the height of the nave roof was 130 ft., and that of the choir roof 142 ft. The height of the tower was 285 ft., of the spire 208 ft., of the whole steeple 493 ft.

[1] Longman's *Three Cathedrals dedicated to St. Paul in London*, 30.

C. F. N. York Minster: North Transept

CHAPTER IV

PLANNING AND GROWTH OF THE ENGLISH PARISH CHURCH

SECTION I

PLANNING OF THE ENGLISH PARISH CHURCH

TO a stranger who visits England, nothing, perhaps, makes such an abiding impression on the mind of secular stability as the vast abbey and cathedral churches which have come down to us from far-off dynasties of Norman and Plantagenet kings. There they stand, as they have stood for near nine centuries—the archaic transept of Winchester, St. Albans' stupendous nave, the towering choir of Norwich—the work of a sterner race than ours, rock-hewn, as it were, out of the solid mountain side, not piled up painfully, single stone upon single stone, by slow patience of mortal toil. Nevertheless, hoary though their aspect is with age, encrusted with the joys and sorrows, record of the faith of five and twenty generations, they rose from the sod only midway in the long record-roll of the English nation. Take up a plank in the twelfth-century transept of Southwell minster, and beneath is seen *in situ* a mosaic pavement of the Roman Occupation. That transept has now nearly eight centuries of age upon it; nine other centuries of history had elapsed before Norman overlaid Roman work at Southwell. To these nine centuries not one of our great abbey or cathedral churches belongs; not one has a stone above ground earlier than the eleventh century. But from the third century of our era there were parish churches in the land; many built by British, some, possibly, by Roman converts. It is possible that the little church of St. Martin, Canterbury, may be in part, at any rate, the very Romano-British church which was found still standing by St. Augustine. The church of Perranzabuloe, Cornwall, may date from the fourth century, or more than a century before the landing of St. Augustine. Preserved in the sand, the ruins were cleared in 1835, when the ancient altar-tomb was discovered covering the remains doubtless of St. Piranus (Quiranus), his mother and his friend, as the legend handed it down; it is probably the most ancient church in the land.[1] In the Roman town of Silchester

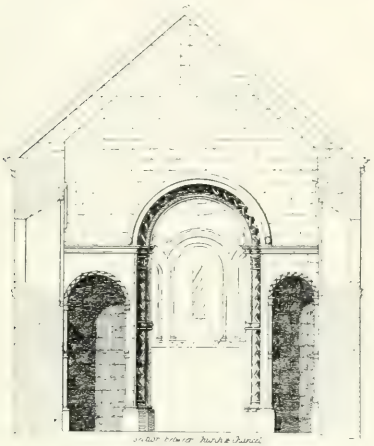
[1] See Dr Cox's *Churches of Cornwall*, 195.

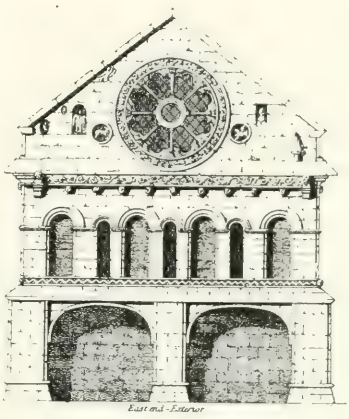
are the foundations of a church-like structure of Brito-Roman date.[1] These are almost the only examples of Roman date.

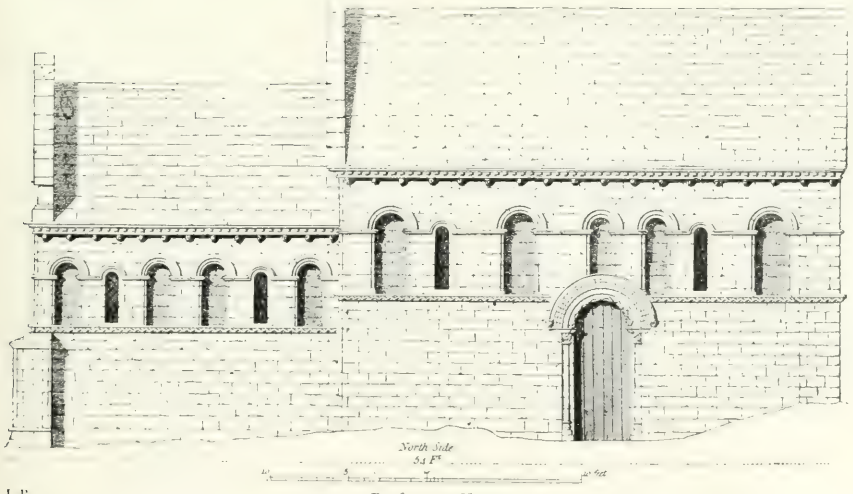
When we turn to Anglo-Saxon days we hear on all sides of cathedrals and abbeys and great churches: the Anglo-Saxon chronicles are full of their glories. Of all these we have practically nothing whatever above ground. A few foundations recently disinterred—*e.g.*, at Peterborough, Rochester, and Romsey—represent the sum of our knowledge, except so much as may be gathered from the vague descriptions of the chroniclers. The greater pre-Conquest churches have disappeared. In their place the mighty builders of Normandy, with all a nation's ransom to build with, erected in some seventy years some of the most gigantic churches of Christendom. Nowhere in France or Italy or Germany or Spain can such a series of vast Romanesque churches of the first rank be found as these great churches of the last years of the eleventh and the early years of the twelfth century. To rear them, the ancient Anglo-Saxon minsters were everywhere destroyed; not one is left for our edification. Many must have wept like St. Wulfstan at Worcester when they saw the churches of their fathers, hallowed by the associations of centuries, go down before the Norman hammers. "We wretches," he said, "destroy what the saints have wrought." Every one of our great Norman churches is, in the long roll of English Christianity, but a foreigner, a late comer, a parvenu.

It is not so with the parish churches. We have a great mass of Anglo-Saxon work still among us; much has been identified already; more remains to be found. Probably few realise what a wealth of Primitive Romanesque architecture survives in England. It is very different abroad. In a French architectural manual a scanty number of pages suffices for the examples of Merovingian and Carlovingian architecture, *i.e.*, work done before or not long after Charlemagne. Of Christian architecture between the sixth and ninth centuries Italy is almost wholly destitute; and the examples are few in Germany and Spain. In England, on the other hand, a big volume is needed to describe our pre-Conquest architecture; and several examples, notably the tower and nave of Brixworth, still to be seen in its entirety except for the loss of aisles, St. Martin, Canterbury, the foundations of St. Pancras in the precinct of St. Augustine's abbey, Canterbury, parts of the churches of Ythanchester, Essex, Monkwearmouth and Jarrow, Durham, the foundations of the churches of Reculver and Lyminge, Kent, and of the cathedral of Rochester, the crypts of Ripon and Hexham, perhaps the church of Escomb, Durham, and parts of those of Lydd, Kent, Wing, Bucks., and South Elmham, Norfolk, may date back to the seventh century. Later examples of Anglo-Saxon architecture are very numerous. Probably nearly three hundred churches may be authenticated as having been built in the Primitive Romanesque style between the seventh and the twelfth centuries. In the great majority, of

[1] See plan in *Gothic Architecture in England*, 215.







J. B.

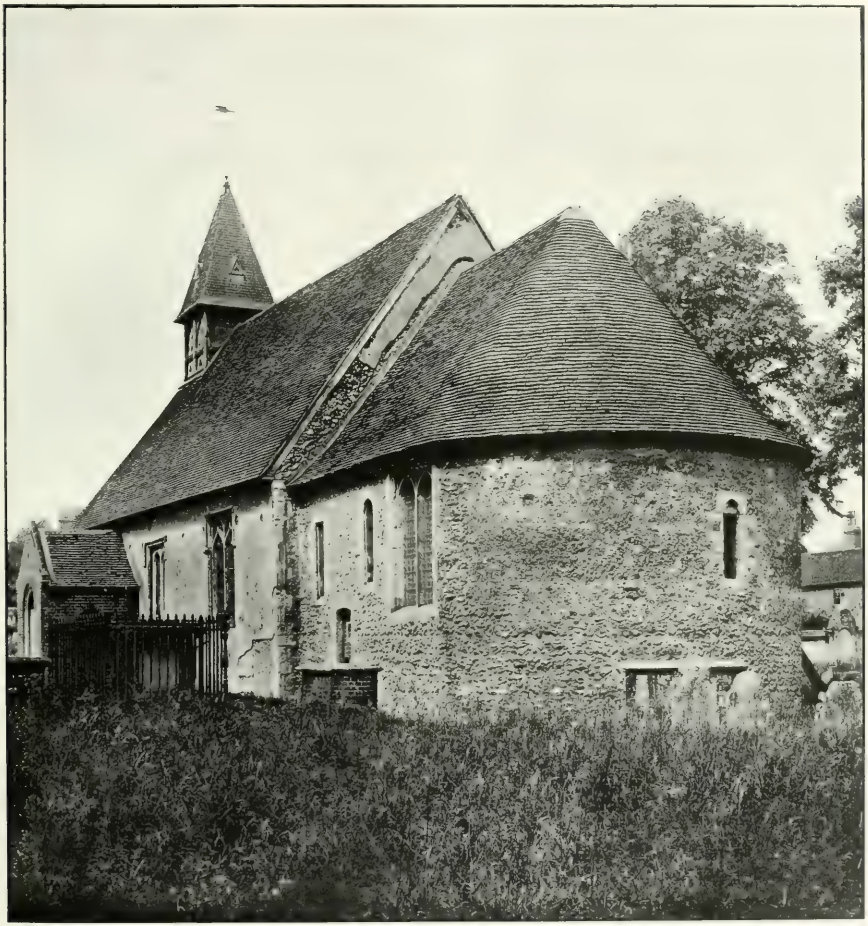
Barfreston, Kent

course, the Anglo-Saxon work exists only in part. But quite a considerable number of these ancient churches still survive, with nave, chancel, and sometimes transepts, practically intact. Brixworth, Northants; Escomb, Durham; Bradford-on-Avon, Wilts.; Deerhurst chapel, Gloucester; Worth, Sussex; Boarhunt, Hants; St. Mary in the Castle, Dover; Dunham Magna, Norfolk; Greenstead, Essex; Kirk Hammerton, Yorkshire; Repton, Derbyshire; Stow, Lincolnshire; St. Martin, Wareham, Dorset; Wittering, Northants; are wholly or mainly the work of Anglo-Saxon builders. As for Anglo-Saxon towers, they are too numerous to enumerate; those of Barnack, Brigstock, Brixworth, Earl's Barton, in Northants; Monkwearmouth in Durham; St. Benet, Cambridge; Holy Trinity, Colchester; Sompting, Sussex, are famous, but there are very many others. A fine group, advanced in type, exists in Northumberland. In the single county of Lincolnshire twenty-six pre-Conquest towers have been enumerated. Against all this great multitude of witnesses the great abbey and cathedral churches are able to shew aboveground—nothing! No nave or choir or transept or tower of the complete or Anglo-Norman Romanesque style is earlier than the year 1070, when Norman Lanfranc began to rebuild his cathedral church at Canterbury. So then the English parish church is venerable to a degree far beyond the proudest church of bishop, or prior, or abbot. From the Greater churches the record of one long period of English Christianity has been almost wholly obliterated; it lingers in the structure of many a humble parish church, bearing abiding witness in its stones to the long ages that bind the religion and art of the Norman to that of the Briton and the Roman. We never accost the humblest parish church without a chance of learning something of the five centuries of Anglo-Saxon and Danish rule, which had elapsed before the Normans reached our shores. And so the history of the parish church has a special interest all its own.

Heckingham, Norfolk

It has another interest also peculiar to itself; it is that its history in most cases must be gathered from itself. Great abbeys like Meaux, Bury, Worcester, kept their own historiographer; year by year the doings of the convent were written down; sometimes as in Abbot Newland's Roll at Bristol, and Abbot Frowcester's Chronicle at Gloucester, the dates of each chief building period in the history of the church are faithfully recorded. At Canterbury we have a minute account of the monastic

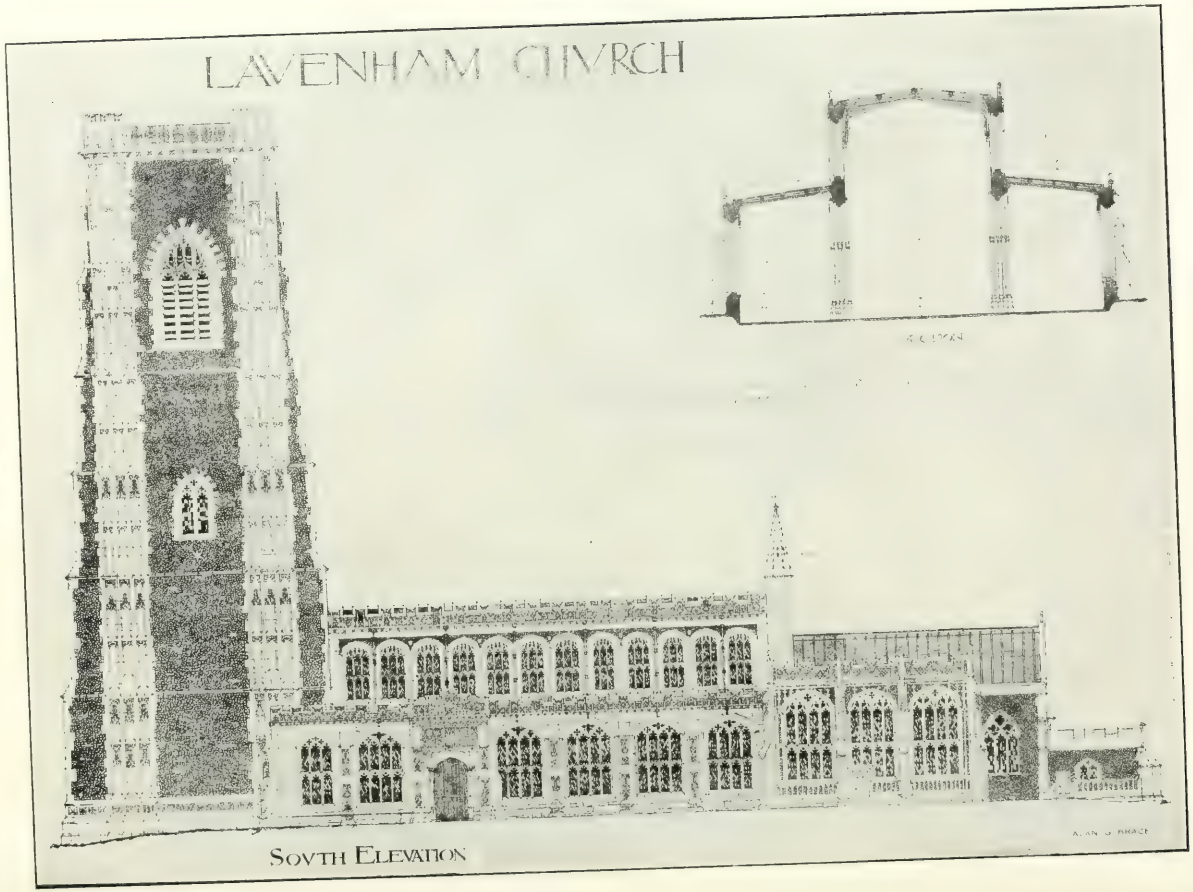
chronicler, Gervase, pillar by pillar, arch by arch, of the rebuilding of the chancel after the great fire of 1174. The first building of Durham is recorded by four



M. E. Bengeo, Hertford

monastic chroniclers. And although, through the lack of interest of many a dean and chapter as to the history of the church which gives them their daily bread,

LAVENHAM CHURCH



SOUTH ELEVATION

great accumulations of documents lie buried in the cathedral muniment rooms, neither transcribed nor catalogued, yet a large amount of information exists in print accessible to all. Round many important churches a literature has gathered. Nowadays, therefore, with monograph in hand, a student can follow the whole long history of cathedral and abbey church. He has not to work out its history for himself; all the main questions have been solved already, and, in the main, correctly. It follows that marvellous as is the splendour of a Westminster, a Canterbury, an Exeter, a Gloucester, the study of any or all of these lacks the freshness which is to be found only in original research. It is one thing to learn somebody else's lesson; it is another thing to find out things for oneself. It is an epoch in a man's life when, with Professor Willis' "Canterbury" or "York" or "Winchester," or Stewart's "Ely," in his hand, he visits those great churches. But his enjoyment is small beside that of the student who, for the first time, succeeds in picking to pieces and putting together, without a scrap of documentary aid from manuscript or book, getting his data only from the stones of its structure, a Burford, a Shere, a Westhall, a St. Mary, Guildford, a St. Nicholas, Leicester. No form of sport is half as fascinating as the chase of the parish church. It is never safe to pass one by, however humble; one never knows what surprising find may not be in store. One fact leads up to another; each new fact tends to facilitate the interpretation of the last. Here and there, of course, an important parish church has been accurately measured, drawn and described; and as to some few, such as Catterick, Yorkshire, and Fotheringhay, Northants (19), we have copious documentary evidence; but in the mass, the parish churches are virgin soil. One may cycle for days, camera on back, rule and note-book in pocket, seeing church after church, all alike unknown to fame, "carent quia vate sacro." In the field of parish church architecture the harvest is plentiful, and the labourers few. Think of the hundreds of churches in Norfolk and Suffolk alone!

When one has set out on the campaign, when the church has been besieged in form, when it has fallen to the assault, when it has given up its spoils, the results will often be found to be of a strange, curious, and utterly unexpected character. The student who has begun research in the big churches, best of all if he has a paper of Willis' in his hand, will find that the conclusions that are presented him as to the growth of abbey church or cathedral are seldom those which he reaches himself by the study of the parish churches. After a time he learns the lesson of lessons—ever to be borne in mind—that a parish church is not a cathedral. It and its predecessors stood there hundreds of years before the cathedral of the diocese was begun. In almost every case it has preserved its parochial character, unmindful, except perhaps in some minor detail, of the doings of its mighty neighbour; to it cathedral planning, cathedral vaulting, cathedral abutment systems, cathedral elevations have been so much Arabic. It may borrow from the cathedral little bits; straight-sided arches from Hereford, ball-flower from Gloucester, marble shafting from Lincoln; but the

main features of its plan and construction are its own. Parish services were not cathedral or monastic services. Benedictine or Cistercian planning was as useless to the parish priest as parochial planning to Benedictine or Cistercian bishop or abbot.

In the parish churches there exist two wholly different sources of attraction. If pure in style, they are very interesting. On the other hand, if they possess much of hybrid character they are more interesting still. We will begin with the first class; it is quite a small class; the examples are precious in proportion to their rarity. It comprises those churches which, with the exception perhaps of the substitution of some larger windows in later days, are just as they were built or rebuilt. It is a great thing to stand before such a church; to know that, in the main, what we see to-day is just what the forefathers of the hamlet saw centuries ago. It is even more interesting than when first it rose fresh and new. Ten, fifteen, twenty or more generations of Englishmen have gathered together within its walls for common worship; there they were baptized; there they were married; they lie buried beneath the shadow of its walls. Generation after generation has passed away like the leaves of the forest; sovereigns and dynasties have risen and fallen; but the little church abides steadfast amid the mutations of mortality. Fortunately we have churches practically complete and intact, representative of every epoch of our long island story. Escomb, Durham, Worth, Sussex, Bradford-on-Avon, Wiltshire, were as we see them now long before a Norman landed in England. Stewkley, Buckinghamshire, Moccas, Herefordshire (236), Adel, Yorkshire, Burnham Norton, Norfolk, Barfreston, Kent (179), Kilpeck, Herefordshire (187), are as they were built by Normans in full occupation of England, speaking in their architecture Norman-French, as they did in their law courts, their castles, and the courts of their kings. The little church of Skelton near York is the abiding memorial of the piety and art of king and people in the thirteenth century; hardly a vestige of other work is to be seen in it. Many a church remains as it was built or rebuilt in that great building period, the first half of the fourteenth century, hardly finished, or left unfinished, on the incoming of the Black Death in 1349. Such are Patrington (62), where of the older church there remains but one plinth made up of former bases; Etchingham, Sussex; Shottesbrooke, Berks.; Snettisham, Norfolk (649); Heckington, Holbeach (237); Ewerby, Lincolnshire; Harlestone, Northants; Sibthorpe, Notts.; Tideswell, Derbyshire, and many another. As time rolls on, more and more churches are rebuilt, often on a magnificent scale, above all in Norfolk, Suffolk, Devon, and Somerset. Such are the glorious Suffolk churches, St. Mary, Bury St. Edmunds, Lavenham (808), Long Melford, Framlingham, Blythburgh, Southwold (193), and ruined Covehithe; the equally magnificent Norfolk churches, Walpole St. Peter, Terrington St. Clement, Sall, Cawston, Lynn St. Nicholas, Black Friars, St. Peter Mancroft, and St. Stephen, Norwich, and the great church of

Loddon, almost unknown, rebuilt by Sir James Hobart in 1496. Of every period pure examples survive; if we want to know how each generation desired its church to look, we have only to visit these and similar examples.

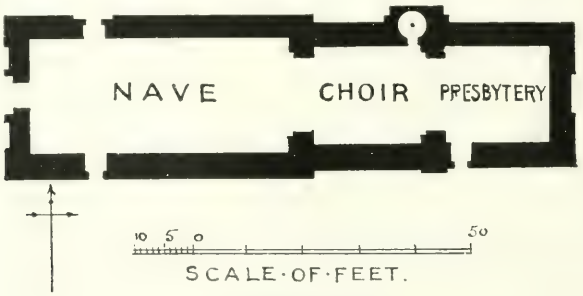
Such churches as the above have a great artistic interest; they are examples of unity of design. Just as in Salisbury, and in Salisbury alone, we have a cathedral in which, undistracted by alien elements, we can study the effects of a homogeneous

Studland from the North

design, so we may be thankful to have at any rate a few parish churches untouched, unaltered, unimproved by later mediæval building. In very few, however, have we the artistic charm of a design single, complete, consistent. In most the interest is primarily historical. That churches of the second class possess an artistic charm also is not to be gainsaid. That charm is the charm of picturesqueness; a picturesqueness of effects all the more telling in that it is spontaneous, unconscious, unstudied. It is a fortuitous picturesqueness. It is moreover from its very source and nature a picturesqueness infinite in variety. Visit the churches till you have seen hundreds, and you will constantly come across new irregularities, fresh juxta-

positions, novelty of grouping and vista and composition. Only remember that none of this picturesqueness was *designed*. It is only a modern draughtsman who invents picturesqueness.

Of the parish churches very few were built in the eleventh century. The rebuilding of the churches of monks and canons had commenced even before the Conquest; Westminster abbey, a thoroughly Norman church, was consecrated, wholly or in part, in 1065; in the same year Waltham abbey was begun; in 1067 Battle abbey; in 1069 Selby abbey; in 1070 Canterbury cathedral; between 1070 and 1100 the building was going on of St. Augustine's, Canterbury, York minster, Lincoln minster, St. Albans abbey, Lewes priory, Rochester cathedral, Malling nuns' church, Lastingham priory, Winchester cathedral, Hereford cathedral, Tutbury priory, Shrewsbury abbey, Ely abbey, Worcester cathedral, Malvern



Stewkley, Bucks.

priory, Bury St. Edmund's abbey, Pershore abbey, Thorney abbey, Old St. Paul's, London, Tewkesbury abbey, Blyth priory, Gloucester cathedral, St. Mary's abbey, York, Castle Acre priory, Chichester cathedral, Lynn priory, Christchurch priory, Durham cathedral, Binham priory, Chester abbey, Norwich cathedral, Tynemouth priory.[1]

Some considerable time, however, must have elapsed before the great increase of parish churches took place in Norman England; for at first, after as before the Conquest, the original status of the rural clergy was not that of parish priests. In Anglo-Saxon and in Norman England the clergy appear originally as merely private chaplains of landed proprietors. They had no regular salary, nothing but what their lord chose to give them; and had neither land nor houses of their own; they lived with him in his hall or castle, saying their mass in such private chapels as those which still remain in the castles of Dover, Colchester, and elsewhere. Where, however, the number of retainers was large, the accommodation must have been very limited or wholly inadequate. The next step was

[1] The list is arranged as far as may be in chronological order; but excludes small churches as well as those which are only known from documentary evidence.

to provide a church for both lord and retainers, sometimes inside the castle bailey as at Ludlow, more often outside. Then came a change in the status of the clergy. So long as they were merely private chaplains, they were under the jurisdiction of their lord, and not under that of the bishop, and they had no cure of souls; that belonged to the bishop. But when a church was built, to be accessible to the retainers and no doubt to other persons in the neighbourhood, it could not be served by the lord's chaplain without infringement of the rights of the bishop. The only remedy was for the priest to apply to the bishop for permission to act as his deputy so far as the cure of souls in this particular church and neighbourhood; this of course was to acknowledge and put himself under episcopal jurisdiction. On submission to the bishop, he got the required permission to serve the church, to bury, marry, baptize, etc. He had now two masters; the one his lord, the patron of the church, and the other his bishop. In the latter he found a good friend, for the bishop, when a church was to be built, stipulated that a parish,[1] which it should serve, should be marked out, and that funds should be provided in perpetuity for parochial purposes. These funds were divided into four portions; one-fourth was for the bishop, one-fourth for the parish priest, one-fourth for the upkeep of the fabric of the church, and one-fourth for the relief of the poor. The parochial endowment took the form of land and houses; and one-fourth of its income formed the benefice of the priest, constituting him a beneficed clergyman. The development described above was a very slow and gradual one; up to about A.D. 800 and sometimes later, the rural clergy were but private chaplains with no cure of souls, nor any benefice. About the tenth century they obtain a cure of souls and a burial-ground. It was not, however, till the twelfth century that they obtained a benefice of land, freehold or copyhold, and with it security of tenure.

G. G. B. Kilpeck, Hereford

[1] Since the rural clergyman was originally but the chaplain of the lord of the manor, it follows that when a parish came into existence, if the lord had but one manor, the parish contained but one manor; but if he possessed several manors, the parish would contain several; *e.g.*, in Devon on the average each parish contains three manors; others, however, contain more; *e.g.*, Cullompton parish includes no less than ten manors. On the other hand the original manor may have been granted later to several tenants, each of whom would have his own chaplain, who again in the end would have each a church and burial-ground; in this case, though there was originally but one manor, there would ultimately be several parish churches and clergymen. See paper "On the Rise of the Parochial System in England," by Rev. Oswald J. Reichel, in the *Exeter Diocesan Architectural and Archæological Society*; 3rd series, ii. 110.

It was not therefore till the twelfth century that the great building of parish churches began. From this time the building of the parish churches must have gone on apace, especially in the towns;[1] and by that time there was at the disposal of the builders a very considerable amount of experience. There were not only important Anglo-Saxon churches with a building period extending over five centuries; there were the lessons to learn from the new Norman cathedrals and abbeys, whose chancels were completed or on the way to completion by the end of the eleventh century; above all, there were the Romanesque churches in the villages and towns from which the Norman invaders had come, nearly all but recently built. It was these last doubtless that supplied most of the ideas for the English parish churches, whether as to planning, construction, or decorative art. A host of these little village churches is still standing in Normandy; of these the English village churches of the twelfth century are close copies. In Normandy there had been time to try several types of church plan; all these were imported, ready-made, into England; we cannot study the beginnings of the evolution of the parochial plan in this country. We do not commence here with the simplest type and proceed by slow steps to the more complex; what we see is churches of simple and complex types going up together.

I. One type, not by any means the most common, but an early type, was that in which the church was a simple oblong, without any structural distinction between nave and chancel. It has been calculated that in Shropshire, probably less than one-half of the mediæval churches possessed chancel arches;[2] in this county the absence of a chancel arch is noticeable not only in chapels, *e.g.*, Edstaston, but in some large churches, *e.g.*, Hodnet and Stottesdon. In most districts, however, this type is exceptional.

II. In Ireland, in which it has been attempted to find the origin of our church planning, the churches were long destitute of chancels, simply because those who erected them could not construct a chancel arch or indeed any arch;[3] Ireland had no Roman remains; we had them in abundance, and were never unacquainted with arcuated construction; therefore in England, and for the same reason in Normandy, by far the greater number of churches had a chancel arch and every church a chancel. This simple bipartite plan of nave and chancel survives at all periods in small churches. In Norman days, as occasionally, but more rarely before the Conquest, some chancels were apsidal, *i.e.*, semicircular to the east;

[1] In Shropshire rather more than one hundred parish churches retain remains of Norman work; very little of this work was done in the reigns of William I. and William II.; the only exception seems to be the great town church of Holy Cross, Shrewsbury, only the western bays of whose nave, however, were parochial: some portion of this work was completed by 1094. See Mr Cranage's *Churches of Shropshire*, 866, 1027.

[2] Cranage's *Churches of Shropshire*, 1045.

[3] See Mr A. Champneys' *Irish Ecclesiastical Architecture*, 1910.

this is a survival of the tradition of the early Christian basilica of Rome. More often, the chancel was rectangular; partly because such a chancel is easy to roof, and an apsidal chancel is not; partly because before the Conquest in all probability a large number of churches were built of logs; and whether the logs were laid horizontally, as in the log huts of Norway, or vertically, as in the log chancel of Greenstead church, Essex, it was equally impossible to build it apsidal.

W. A. Chipstead from North-east

Architecturally this simple type of church, without aisles, without transepts, without tower, was bipartite; ritually, however, it was tripartite, for a difference of level at the *gradus presbyterii* usually demarcated the sanctuary from the choir. Examples are Bengeo, Herts. (181), Heckingham, Norfolk (180), Barfreston, Kent (179).

III. If the church was of greater pretensions, it might be spanned by two arches; one, the chancel arch, between the nave and the choir, the other, the

E. I. H. Iffley from West

sanctuary arch, between the choir and the sanctuary. The bay intermediate between the two arches was the choir, and was usually surmounted by a central tower. Churches of this tripartite plan are numerous in Normandy; Coln St. Denis, Gloucestershire, Iffley, Oxon. (241). Studland, Dorset[1] (185), Kilpeck, Herefordshire (187), may serve as examples.

F. H. C. Whaplode, Lincolnshire

IV. All churches probably had at least three altars; even a tiny Norman church like Farley (234) and that of Warlingham, Surrey, both without aisles or transepts, had three altars, as is shewn by the piscinas in the walls. Where the nave was broader than the chancel, there was space on either side of the chancel arch for two minor altars, one on each side; the arrangement is well shewn at Castle Rising and Melton Constable, Norfolk. These side altars no doubt were quite small and low, like the one still remaining (not *in situ*) at Studland, Dorset. If it was desired that the two minor altars should each have a chapel of its own, then transepts were thrown out to north or south; each transept serving as a chapel and containing an altar. The crossing was surmounted as before by a central tower.[2] This arrangement provides a third type of church, the cruciform. It was not by any means so common in England as the second, but it never went out of use. It is curiously sporadic. In some dis-

[1] For Studland see illustrated paper by Mr W. I. Travers in the *Architectural and Topographical Record*, i. 105. The nave is Anglo-Saxon, but received new doorways, windows, etc., in the twelfth century. As may be seen from the truncated belfry windows, the tower has not been carried to its intended height; its buttresses are later additions.

[2] Cruciform churches without central towers are rare, but do exist, *e.g.*, Acton Burnell, Salop, built between *c.* 1250 and 1275.

I. H. C. Walsoken, Norfolk

tricts almost every church is cruciform; in many the cruciform type is almost wholly absent. In Cornwall the typical Norman church was cruciform; in Devon rarely, except in early work. Chipstead, Surrey, built early in the thirteenth century, is a good example of a cruciform village church (189).

V. An alternative method of providing additional space was not to build out transepts, but to add aisles to the nave. This was not commonly done till the second half of the twelfth century; examples are Clee, Lincolnshire; Towyn, Merioneth; St. Margaret at Cliffe, near Dover; Steyning, Sussex; and Walsoken (192), Whaplode (191), and Sutton St. Mary in the Wisbech district. In later days this became the normal plan of the English parish church.

VI. In the last half of the twelfth century there were built a few churches in which not only the nave had aisles, but the choir also had aisles or rather chapels; the sanctuary remaining aisleless in order to secure good lighting for the High altar. This excellent plan is found in several of the churches of the monks and canons; *e.g.*, Rochester cathedral and Leiston priory, Suffolk; and in the fifteenth century occurs in some of the finest parish churches in East Anglia; *e.g.*, Southwold (193), St. Margaret's, Lowestoft (2), Covehithe.

F. B. Southwold, Suffolk

VII. The next step was to continue the choir chapels eastward till they were flush with the east end of the sanctuary. This plan occurs at Eastbourne in the last years of the twelfth century; in the fifteenth century it was much in vogue in the larger town churches, *e.g.*, Wakefield (274).

VIII. All the above types of planning were in use in parish churches in the twelfth century. It was not till 1381 at North Walsham, Norfolk, and in 1413-1419 at St. Nicholas, Lynn, that the seventh and last type of plan received the final development. This consisted in making the chancel of the same breadth and height as the nave, omitting the chancel arch, and supplying its place by a screen; *e.g.*, Gresford, Cheshire. In plan these churches are the same as those of the sixth class; the difference is that the chancel is not lower than the nave, and that, there being no chancel arch, the whole church from west to east is one vast hall; *e.g.*, St. Stephen's, Norwich (828). This type of plan is practically universal in the late Gothic of Cornwall.[1]

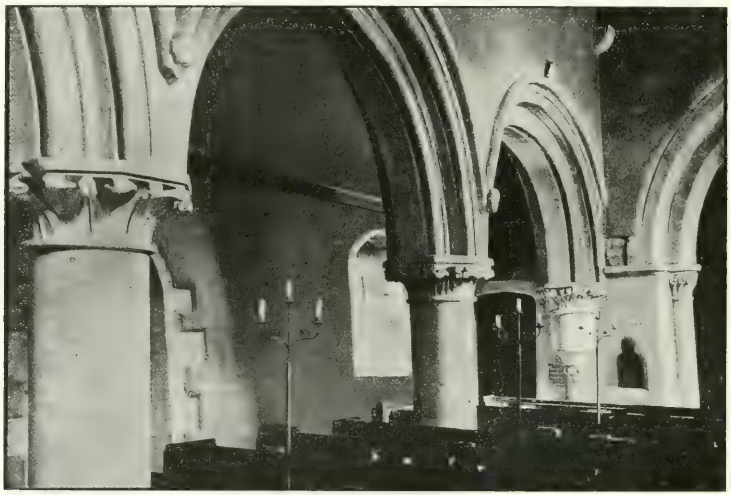
[1] "Chancel arches are entirely lacking in every fifteenth-century church in Cornwall."—Dr Cox's *Churches of Cornwall*, 21. In Devon also they are almost unknown.—F. E. Howard.

To this it is to be added that the above methods of planning are not mutually exclusive: *e.g.*, some churches were planned with transepts and some with aisles, but many with both. Thus Hemel Hempstead (921) and St. Cross, Winchester (169), were set out in the third quarter of the twelfth century with both transepts and aisles (the nave of the latter was not completed till the following century).

SECTION II

GROWTH OF THE ENGLISH PARISH CHURCH

We have spoken as if these were the normal developments of the early and simple plan of the English parish church; they are not; as a matter of fact the



F. H. C. Little Faringdon, Oxon.

development was far more often abnormal; of very many a parish church all we can say is that like Topsy, "It grew." It grew with the growth of the population of the town or village; it grew with the increase of the number of altars and of chapels for altars, with the foundation of more and more church guilds and municipal guilds, and with the more and more frequent provision of chantry endowments. It grew horizontally and it grew vertically. Nave grew and chancel grew. It burst out to the north and the south and the east and the

west. It gathered on its flanks annexe after annexe, some large, some small; some of one shape, some of another, disposed almost anyhow and anywhere and almost at random. Like a growing boy, it was put into one suit of clothes after another, each bigger than its predecessor; nay, after repeated change of suits, they sometimes put in a new boy. There was no end to the haps and chances that might come upon a church that went on being used it might be for a thousand years.

Nevertheless it was not always growth by increase: some people grow bigger, but there are some who grow old and small; so it was with the parish churches. This suggests at once a basis of classification of parish churches. We can divide them into those which have grown, and those which have not. Of the latter class the Norman churches of Barfreston, Kent (179), and Kilpeck, Herefordshire (187), may serve as a type. As for the churches which have grown, they may be subdivided into those which have grown large and those which have grown smaller. We will begin with those which have grown larger. A church may grow larger in many ways. It may be made wider, it may be made higher, it may be made longer. Also it may get annexes in the way of western tower, vestry, chantry chapels, sacristan's or priest's rooms and anchorage.

T. F. Wimborne Minster, Dorset

We begin with the different ways in which the breadth of the church was increased; and first with the unaisled nave of a church of the second type described above. In East Anglia the typical early church has an unaisled nave, usually three times as long as it is broad, and as high as it is broad; to the east a small unaisled chancel, rectangular or apsidal.

But the population did not always remain small; generally it increased so much that the nave had to be enlarged to provide more room for the worshippers to stand or kneel. The increased space was got either by widening or by lengthening the nave; often by both. First let us look at the way in which the nave was widened. A very crude method was adopted at Thorington, Suffolk. There the Norman church, though very small, has as usual very thick walls of chalk and flint. All

that was done at Thorington was to hack back the inner surface of the chalk wall from the floor about 6 ft. in height, so as to make room for about one additional thin worshipper on each side of the nave. In the north of Suffolk one of the side walls of the nave was often set back 3, 4, or 5 ft. When this is the case, the old western tower, which in the Island of Lothingland, Suffolk, is usually round, ceases to be in the axis of the widened nave; *e.g.*, at Blundeston, and in Norfolk at Wheatacre and Norton Subcourse (159). Sometimes both walls are set back; this was done early in the fourteenth century at Lound, Suffolk. Sometimes one suspects that a broad nave has been obtained by absorbing the aisles, *e.g.*, at Laxfield, Suffolk. Usually, however, the great cost of a very wide roof would preclude the employment of this method. Abroad it is not uncommon. The broad naves of Notre Dame de la Couture, Le Mans, and of Bordeaux cathedral were obtained by the absorption of aisles; and at Zamora in Spain almost all the churches have thrown the aisles into the nave. Again, even when a church had aisles, it is by no means rare to find that to widen the nave, one or both of the pier-arcades has been set back. At St. Michael, Coventry, at Cirencester, at Grimoldby, Lincolnshire, and many other places, there remain on the east wall of the tower the weathermolds of roofs much narrower than the present one. At Skidbrook, Lincolnshire, the weatherings on the east face of the tower shew that the nave was originally about 18 ft. wide; the present nave is about 30 ft. wide. At Louth the foundations have been found of the two pier-arcades of a nave 8 ft. narrower than the present one.

More often, however, when more lateral space was needed, the nave was left unaltered, and the additional room was got by building an aisle or aisles. When only one aisle was built, it seems to have been usually built on the north side.[1] Mr R. P. Brereton found that in the valleys of the Nene and Welland, where a Norman church had, as frequently, but one aisle, it was usually on the north side; Mr A. Hamilton Thompson came to the same conclusion as to the Yorkshire churches; and Mr F. E. Howard as to the churches of Devon. For some mysterious reason, when our villages began to build churches, they built them by preference on the north side of the village; the reason perhaps may be that otherwise they would have the dark side of the church always in view. There was doubtless a prejudice against being buried on the north side of the churchyard, overshadowed by the church, and out of sight of the rooftree where their lives had passed:[2]

[1] This statement must not be pressed too far. In Shropshire Mr Cranage found that in twenty-one churches the south aisle was built first, and in only eighteen the north aisle. *Churches of Shropshire*, 1040.

[2] "To be buried on the north side of the church, in the language of the Eastern counties, is to be buried out of sanctuary; on the north side are buried suicides and the unbaptized."—Neale and Webb's *Durandus*, c. i. Evidence to a similar effect is borne by a quaint epitaph:—

"That I might longer undisturb'd abide,
I choos'd to be laid on this Northern side."

In 1657 Benjamin Rhodes, steward to the Earl of Elgin, requested to be buried on the North side of the

people would prefer to be buried on the sunny side of the churchyard, the home side. To be buried on the north side might be "out of sight, out of mind"; if they were buried on the south side, where was usually the main entrance to the church, then their relatives, and good Christians generally, seeing their graves, before entering the church, might be moved to say a prayer for them as the Church indeed enjoined. In the Hours of the Blessed Virgin as used at Salisbury[1] prayers are provided for those passing through a churchyard; one runs: "Avete omnes animæ fideles quarum corpora hic et ubique requiescunt in pulvere; Dominus noster Jesus Christus . . . dignetur vos a poenis liberare et inter choros sanctorum angelorum collocare; ibique nostri memores suppliciter exorare ut vobis associemur et vobiscum in coelis coronemur." Moreover, as a rule there is considerably more open space to the south than to the north of a church;[2] burial therefore on the south side being more frequent might come to be regarded as more normal and appropriate. The aisle was not built modernwise. If we nowadays had to add aisles to an unaisled nave, we should probably shut up the church, pull down the side walls of the nave, erect pillars and arches and aisle walls, and then roof in and glaze. Where a parish church is locked up all the week except on Sunday, it would not be much missed. But the old churches were open every day of the week and all day; daily mass was said; there were other week-day services at the various altars; people dropped in to say their prayers or to take part in any service going on just as they do still in Catholic churches here and abroad.

F. F. Ickham, Kent

churchyard of Malden, Bedford, "to crosse the received superstition." In 1880 at Saltfleetby All Saints, Lincolnshire, not a single tombstone or grave existed on the north side. See Walter Johnson's *Byways in British Archæology*, 342.

[1] Rock's *Church of our Fathers*, New edit., iii. 114.

[2] It is possible that the graveyard is as a rule more ancient than the church. If a pre-existing graveyard was selected, as it naturally would be, as the site for a church, there would be a desire not to interfere with the graves; and where possible, the church would be built at the far side of the ancient graves.

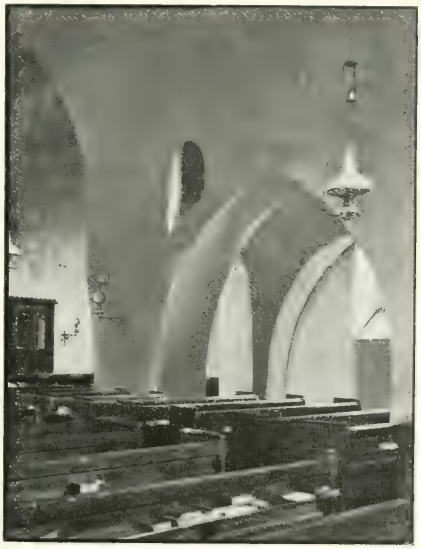
Moreover, with our machinery and facilities for transport we build rapidly. A pre-Reformation aisle would probably be as many months building as it is now weeks. Therefore our drastic methods were not employed. Imagine the scene. The builder would first build the end walls and the side wall of the new aisle. But he would have to leave an aperture in the new side wall through which people could get at the old north or south doorway. This being so, he would probably not build the side walls of the aisles continuously from east to west or the reverse; but begin at both ends and build till he reached the place where a new doorway was to come. That he did so sometimes is proved by the fact that the eastern and western portions of the side wall of an aisle do not always line. At St. Mary, Scarborough, the two and half eastern bays of the south side of the nave were built with a thick wall; then a little later the builder began at the west with a thin wall; and there is an awkward junction where the two sections meet.[1]

Another curious bit of evidence points to the same conclusion. In several churches it will be found that one of the arches of the nave is wider than the rest; usually the second from the west. At Carshalton, Surrey, aisles were added to the nave, on the north side *c.* 1170, on the south side *c.* 1190; there were three arches on either side, and the central arch of the remaining arcade, the southern, is considerably broader than the others. The explanation probably is that if the second pillar from the west on the south side had been built equidistant from the eastern pillar and the western *respond*[2] it would have had to be placed in the centre of the original south doorway of the old unaisled nave; and as it was desired to retain in use the old nave, together with its south doorway, till the whole of the south aisle was built, the pillar was built a little west of the doorway. To return to the builder; having completed the aisle walls, he would then cover in the new aisle with a lean-to roof. Next perhaps he would put mullions and tracery into his windows, and would glaze them. Then he would build the new doorway; or if there was a Norman or other doorway in good condition in the old nave wall, he would take it down carefully and reset it in the aisle wall. Scores of doorways of the twelfth and thirteenth century have been so treated; one must not imagine, when one sees a Norman doorway, that the wall in which it occurs is necessarily Norman also. So also with Gothic doorways. Etchingham chancel, Sussex, was built late in the fourteenth century; but the priest's doorway is thirteenth-century work. At Leominster and Louth doorways, whose capitals have the characteristic stalked foliage of the thirteenth century, have been reset in fourteenth and fifteenth century walls. At Kenilworth the Norman doorway is not bonded into the fourteenth-century wall; absence of bonding is always suspicious (700). At Whaplode, Lincolnshire, the south aisle was built in the fifteenth century; the doorway into it is plainly work of the last years of the twelfth century. At St. Stephen's, Bristol, William

[1] *Archæological Journal*, liii. 200.

[2] A *respond* is a half pillar, bonded into an end wall and supporting the end arch of a pier arcade.

of Worcester describes the moldings of a doorway on the north side of the church; it is now on the south side. At Birkin, Yorkshire, is a striking instance of a twelfth-century doorway reset in the wall of a broad fourteenth-century south aisle. At Beckingham, Lincolnshire, where there is documentary evidence for the rebuilding of the aisles a few years before 1347, both north and south doorways are of the twelfth century; as the original addition of aisles to the church was made *c.* 1220, these doorways are now probably in their third position. At Grantham the south doorway and the outer archway of the south porch were rebuilt in the new wall of the south aisle and the new porch *c.* 1300: much of the old work of the earlier aisle seems to have been incorporated in the new wall. At Felton, Northumberland, where a south aisle was built towards the end of the thirteenth century, the outer doorway of an early thirteenth-century porch became the new south doorway, while the old south doorway was left without alteration as an arch in the new south arcade; the western bay of the aisle adjoining the old porch is, however, much earlier than the rest; it may have been intended, as at Polebrook, Northants, for the base of a tower, the intention being subsequently abandoned.



I. E. Manorbier, Pembroke

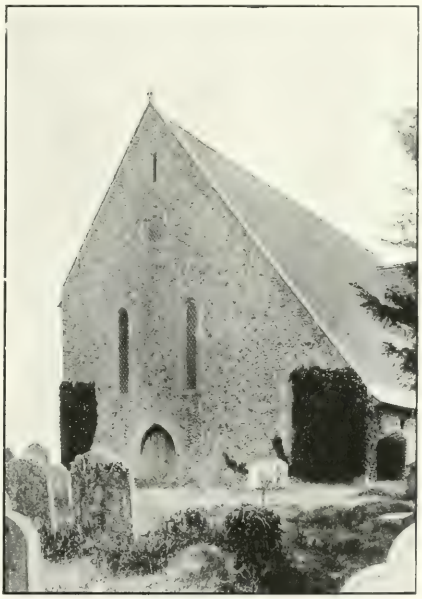
Sometimes there was attached to the old unaisled nave a porch with two doorways, one external and one internal. If the new aisle was made as broad as the porch was deep, then the outer doorway could be used as aisle doorway; and the porch and inner doorway taken down: this seems to have been done at Castor and Peakirk, Northamptonshire. At West Walton, Norfolk, there was originally a narrow south aisle with a deep porch; this aisle was widened; the inner doorway of the porch was taken down, and then, after a piece had been lopped off the porch, the stones of the inner doorway were reset. On the north side there was no porch; so, when the north aisle also was widened, the doorway was simply taken down and reset. The position of the lateral porch or porches is also often significant. The normal position of a lateral porch is in the second bay from the west (leaving room for a screened chapel in the westernmost bay of the aisle) or else, as often in Norfolk, in the westernmost bay itself. If then the porch opens

into the third or any other bay further east, as at Grantham, it is to be suspected that when the original entrance was made, the nave was shorter than it is at present; it is only necessary to enter Grantham nave to see that the eastern are older than the western bays; indeed there are portions of the original west wall still left, utilised as piers, one bay west of the porches.

All this time, while aisle walls and roofs and windows and doorways were being built, the nave remained to the parishioners in uninterrupted use. The final step was to open up the new aisle to the nave; in other words, to substitute piers and arches for solid wall. Two methods seem to have been in vogue. If the parish was poor, all that was done was simply to hew so many arch-shaped openings in the thick wall, leaving blocks of wall between to support the arches. This is plainly the way in which pier-arcades were obtained at Ickham, Kent (197); Manorbier, Pembroke (199); Billingham, Durham; and Tytherington, Gloucestershire. More often, instead of these unsightly and obstructive blocks, pillars, as slender and graceful as might be, were desired. To make room for such a pillar, a vertical slit was cut in the wall, and in this was built up, stone by stone, plinth, base, shaft, capital, abacus. Then, when the pillars were all complete inside the wall, the arches were inserted in similar fashion, one voussoir at a time, only as much of the old wall being cut out as was necessary to get room for it. Strange as the method may seem to us, it is not unknown in modern practice; it was employed quite recently in adding an aisle to St. Luke's church, Croydon. A curious bit of evidence supplies the desired proof that it was actually employed in mediæval days. In such an example as that described above, the original unaisled nave would, of course, have side windows. If the nave was but small, these windows would probably not be very high up. Also being small, narrow windows, as they would be in an early church, they might be set rather close together, perhaps 4 ft. apart. What would happen when arches were inserted below? These arches would certainly be given a wider span than 4 ft.; and if they were semicircular arches, they would rise to a considerable height; if they were pointed arches, they would rise still higher. Two things would follow. Some of the arches would cut into the lower parts of some of the windows, as at Manorbier, Brigstock, Northants; Fetcham, Surrey; and St. Michael's church outside St. Albans (243); and these windows consequently would have to be wholly or partially blocked up. Secondly, most of them would be unsymmetrical with the arches below. If the windows had been built *after* the arches, they would have been set symmetrically; *i.e.*, either over each pillar or over the apex of each arch. It follows, therefore, from this queer method of procedure, that in such a church the upper parts of the nave wall are the most ancient, and the bottom parts the most recent. And if the piers and arches are Norman, as they are at Fetcham, Brigstock, St. Nicholas, Leicester (242), and Minster in Thanet, it follows that the wall containing the blocked windows above the arches is either early Norman or pre-Conquest work. In some cases the upper walling is undoubtedly

the remains of an unaisled Anglo-Saxon nave. At Fetcham one of these blocked windows is narrower at the top than at the bottom; a decided characteristic of pre-Conquest work;[1] so also at Geddington, Northants, the north wall, with its rough decoration of triangular arcading, is undoubtedly pre-Norman; as also at Brigstock, Northants. At Bakewell, Derbyshire, a whole row of such windows was found above the pier-arcade; they are now plastered up. They are not at all uncommon in old churches in Kent; *e.g.*, Sturry and Fordwich.

To turn back to the builders. When they had blocked up such windows as could not be retained, and had finished building their pier-arcade, all that was left was to knock out the masonry beneath each arch, and to open out the nave to the new aisle. And, as has been shewn, all the extension was brought about with slight cessation of the use of the nave for services and private prayer.



F. B. Climping: Nave

If the new aisle was added in the twelfth century, it was usually very narrow; in the Surrey church of Compton it is but 7 ft. wide. It is hardly likely that an aisle so narrow was built to allow a larger number to have a view of the celebrant at Mass. In those days there were no chairs or benches in the nave, and there would not be, as now, a gangway down the middle; a nave therefore of moderate size would accommodate quite a large number of worshippers; the narrow aisles were probably built partly as passages to give easy access to all parts of the nave, partly for processional purposes. In the thirteenth century very broad aisles sometimes appear, generally in big town churches; and sometimes they have gabled roofs, and thus are really not so much aisles as parallel naves or churches. Far more often the thirteenth-century aisle is narrow; *e.g.*, at Limpsfield, Surrey, it is only 8 ft. wide. Whenever, therefore, one sees a pier-arcade of the twelfth or thirteenth century and a *broad* aisle, the presumption is that the aisle wall has been set back and is later in date than the pier-arcade.[2]

[1] It is illustrated in the *Victoria History of Surrey*, vol. ii.

[2] Not always. Norman aisles are broad at Petersfield, because they were built in a line with the end walls of the transepts.

Often a narrow aisle will be found on one side of the church, and a broad aisle on the other. In such a case the probability is that the former is the earlier; this is the case at Tansor, Northants; Arksey, Yorkshire; and Eynsham, Oxford; which have one narrow and one broad aisle. Again, in such churches, when an aisle was narrow, it was consequently also low. Not unfrequently, therefore, such a church was roofed like a barn with a single span roof covering nave and both aisles or nave and one aisle; examples are plentiful in Kent and Sussex, *e.g.*, Climping (201). For the widening of the aisles there was more than one reason. In the first place, a few more people could see the celebrant at Mass. Secondly, it enabled much greater importance to be given to the altar in the eastern bay of the aisle. In some districts indeed the aisle seems to have developed into what was to some extent an independent church; *e.g.*, in the church of St. James, Shere, Surrey, the church had originally a Norman south transept, and to the east of it an aisle, as at Sompting, Sussex; the transept and aisle together formed the Lady chapel, the aisle being sanctuary, the transept choir. But in the thirteenth century this transept was carried back as a south aisle to the west end of the church, thus providing Our Lady's chapel with a broad nave; and in the following century the Lady chapel was extended eastward, so as to give Our Lady a more dignified sanctuary. The disposition of the south aisle of Raunds, Northants, offers an exact parallel to that of Shere. So also at Staindrop, Durham, the south aisle is unusually wide, about 4 ft. wider than the nave, and has an independent set of sedilia, and a separate vestry at its east end. Its altar was the Lady altar, and at it were founded four or five chantries. In such a case one seems to see growing up what is almost an opposition church; the church of Our Lady becoming as important at Shere as that of St. James (245). Such broad aisles are common in Kent, Surrey, and Sussex, and generally have not a lean-to roof, but a span roof of the same shape as that of the nave and often as lofty and as broad. Such a church is rather to be described as one of parallel naves than one with nave and aisles. Thirdly, the broader the nave, the more room there was in it for chapels. It was quite common in the large Lincolnshire churches to have chapels at both ends of the aisles; and the presence of a piscina or an exceptionally large window,[1] *e.g.*, at Weobley, often points to the existence of a chapel placed more or less centrally in the aisle. At Ludlow there were three chapels in the north and four in the south aisle.[2] A fourth reason for broad aisles was that in

[1] It is usual at "restorations" to destroy such windows, and with it much of the church's history, that the row of aisle windows may "match."

[2] There were five more altars at Ludlow under the arches of the nave, two more in each transept, and another at the east end of the nave. All these seventeen altars would be surrounded by screens; it was only in the nave that a view of the High altar could be obtained, and even that only through the openings in the big Choir screen; there was no such thing as an "uninterrupted vista" in an old English church. At Tavistock there were altars to St. Eustace (the patron saint), Our Lady, Holy Trinity, St. Saviour, St. John Baptist, St. Stephen, St. Blaise, St. Katherine, St. George.

the fifteenth century, when preaching was in great vogue, and permanent pulpits were put into many naves, and oak benches for the faithful to sit on, broad aisles supplied the accommodation diminished by fixed seats and gangways.

If the village grew no more, it might happen that only a single aisle was ever built. If a railway passenger will keep a lookout from the window of his express, he will see many a church with but one aisle. More often two aisles were built. Sometimes, as at Toot Baldon, Oxford, both the aisles are narrow and both of the same width. It would seem, therefore, that they were built together. On either side of the nave of this church are four arches, and west of each arcade are very deep responds. These seem to be portions that have been left over of the walls of an earlier unaisled nave. The presence of a deep respond often argues the previous existence of a wall, *e.g.*, at Dorchester (259). The aisles may be duplicated. Sometimes the outer aisle is and always has been nothing but an outer aisle. At St. Helen's, Abingdon, there are ancient roads, one to the east, one to the west of the church; therefore the church could not be lengthened. The only way to get more room was to widen it, by giving it double aisles on either side. More often, what is now but an outer and second aisle was originally not an aisle, but the chantry chapel of some family or guild. It has only come to look like an aisle because we Protestants have swept away the screens which formerly secured its independence and privacy. At Cullompton, Devon, is a magnificent outer aisle, ceiled throughout with fan vaulting; the inscription on the tomb of the founder shews that it was the chantry chapel of John Lane, Merchant (364); instances of this abound.

Where two aisles existed side by side, the accommodation of the church could be enlarged and the lighting improved by throwing them into one, the intermediate arcade being removed, and both being provided with one common roof. At Wisbech the intermediate arcade was not removed, but was rebuilt *c.* 1450 in such a way as to unite two naves as far as possible; the span of the combined naves would have been much too great for a single roof without the support of an intermediate wall.

Very frequently the original narrow aisles were widened. Of all methods of increasing the accommodation of the church this was the most common. At West Walton, Norfolk, the thirteenth-century aisles were 11 ft. wide; in the following century they were widened, one to 18 ft., the other to 22 ft. Sometimes the new aisles were actually wider than the old nave which remained between them; *e.g.*, in the great church of St. Nicholas, Yarmouth, where the nave is 24 ft., but each aisle 43 ft. wide. If the church was cruciform, like Wakefield, Shere, or Dorchester priory church, it was common to set the aisle wall back till it was in a line with the end wall of the transept. Then an arch was cut through the west wall of the transept, and what previously had been one arm of a transept became merely the easternmost bay of a lengthened nave-aisle; in such a case a straight

joint should be found between the older masonry of the end wall of the transept and that of the side wall of the aisle; the masonry too will probably be of a different character; *e.g.*, Dorchester priory church (256). Internally the tallness and broadness of the easternmost arch of the nave may betray its transeptal origin; *e.g.*, at Newark, High Wycombe, Buckinghamshire, and Bere Regis, Dorset (806). Not always, however; when the aisle wall of St. Margaret, Leicester, was set back, the new wall was built much higher than the old one; moreover, the pier-arcade, which, opening originally into a low and narrow aisle, had itself low and narrow arches, was rebuilt with a smaller number of arches, each as lofty and as broad as the surviving north and south arches of the old transept. So, internally, the cruciform character of the church was obliterated. It was obliterated externally too. For the gabled roof of the transept was removed, and both the transept and the new tall aisle were roofed with one continuous lean-to roof. But the history was not obliterated. For the easternmost pillar of the arcade has two capitals, the later one superposed above the earlier.[1] It is from the duplication of these capitals that we argue that there were earlier arches less lofty than the present, and if less lofty, then less wide; consequently that these narrow and low arches opened into a low aisle, while the wider and taller easternmost arch must have opened into a transept. The eastern responds of the nave of St. Mary's, Stafford, shew a similar heightening of the arcades west of the transepts; these have now been wholly rebuilt, but in facsimile of the old arrangement. Wilbarston, Northants, is another instance of the absorption of transepts in aisles.

H. C. E. Castor, Northants

When a pier-arcade and an aisle wall have been built simultaneously, exactly opposite each pier there was usually built a buttress to stop any thrust of the principal rafters of the lean-to roof. If it was an early arcade, the arches would probably be narrow, and exactly between each pair of buttresses there would be a

[1] Compare Ledbury (205).

small narrow window. Take, for example, a nave which in the twelfth or thirteenth century had five arches on the north side of it. It would have five narrow windows in the north wall of its aisle and six buttresses. But if the aisle was widened in the fourteenth or fifteenth century much broader windows would be inserted in the new wall, and there would not be room for five of these; perhaps for three only. In such a case the aisle would still have five arches, but only three side windows and four buttresses. Thus unsymmetrical disposition of arch, buttress, and aisle window argues difference of date; *e.g.*, Bishop's Lydeard, Somerset, and Badgeworth, Gloucestershire. The above case is one in which the arches are more numerous than the buttresses, and therefore older. But the reverse may happen. The arches may be less numerous than the buttresses, and therefore more modern. This last unsymmetrical disposition of buttresses is seen at Weobley, Herefordshire, and Dorchester, Oxon. (264).

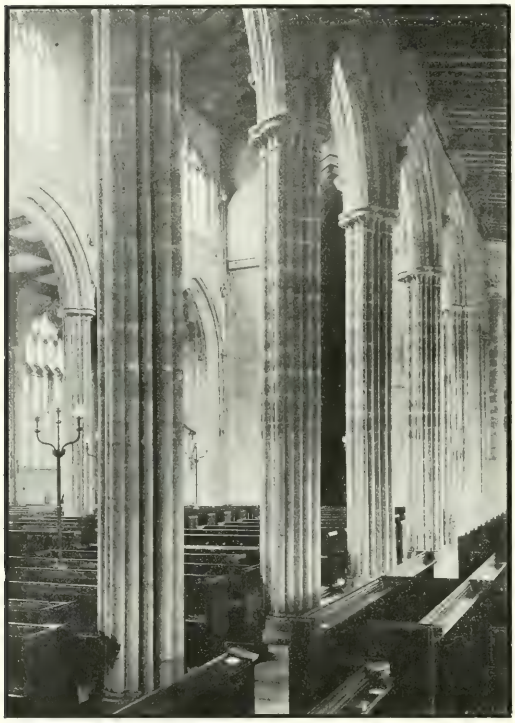
F. B. Ledbury, Hertford

When an aisle was widened, it would also be heightened, for more than one reason. For one thing, if it was made higher as well as broader than the old aisle, it could be built outside and over the top of it; it could be roofed in, glazed, and completed, and all ready for the use of the parishioners before a stone of the old aisle was touched.[1] Secondly, the broader the aisle, the further from the nave—which in early churches seldom had a clerestory—was its main source of light, the aisle windows. Bigger windows than those of the old aisles thus became necessary. They were made tall as well as broad; and the new aisle wall had to be built loftier than the old one to receive them. At Castor, Northants, it is plain that the original aisle,

[1] This was quite as much so in the Greater churches. In Tynemouth priory the new chancel arcades were built in the centre of the aisles of the Norman church, and consequently did not interfere in any way with the Norman chancel, which would continue in use until the completion of new work. (W. H. Knowles in *Archæological Journal*, lxvii. 15.) So also the existing chancels of Lincoln, Canterbury, and Selby were made so broad as to allow the temporary retention of the old chancel.

which, as the capitals of the arcade shew, was built in the thirteenth century, was much lower than the present one (204).

Quite frequently one may see the corbels of an older low roof remaining above the pier-arcade on the inner face of the wall; *e.g.*, at Ledbury, Herefordshire. Hundreds of them have been removed at "restorations," to the destruction of the churches' history. Sometimes two rows of corbels at different levels, neither of them now in use, may be seen. This may mean that there have been two aisle walls anterior to the present one; the aisle has been widened *twice*, and each time has been built loftier.



I. H. C. St. Cuthbert, Wells

Sometimes the aisle walls were raised so much that their lean-to roofs cut across the clerestory windows. In such a case a new clerestory was usually built higher up. This is seen at Wimborne (195), Dilwyn (229), and elsewhere. The south wall of St. Mary, Leicester, is an example of an absorbed clerestory. At Weobley, Herefordshire, only the tracery and heads of the clerestory lights are glazed, the lower parts being blocked up. Sometimes, however, the aisle was heightened without being widened; the object was merely to get in taller windows.

If the old wall was surmounted by a corbel table or parapet, this might be taken off, a few courses of masonry added, and then the corbel table or parapet reset. Norman corbels may be seen high up in the heightened wall of St. Peter in the East, Oxford. A Norman corbel table is seen also at Bredon church, Worcester, at the top of a chapel wall of the thirteenth century; here it may have come from the wall of an earlier unaisled nave.

But it was not enough to heighten an aisle for the insertion of tall windows, if the original low pier-arcade were retained. Though the aisle would be well lighted

by the new tall windows, the nave would get little more light than before. Frequently, therefore, the pillars were heightened by the addition of a few more courses. At Ross the capital as well as the pillar is retained, and on the top is superposed another pillar; so that the pillar has two capitals, one at the top, the other about halfway down. At St. Cuthbert, Wells, the old capitals with stalky foliage are retained, but they are twice as high up as they were originally; the upper and lower portions of each pillar are of a different stone; some of the pillars, moreover, are crooked, as at Wakefield (206). At Rothwell, Northants, the nave arcades were doubled in height *c.* 1250, the old capitals and arches being reused. Similar examples of lengthened pillars are seen at Pinchbeck, Sutton St. Mary and Spalding, Lincolnshire. At Louth the old pillars are reused, but they are mounted on new tall plinths to get the arches higher. At Skidbrook, Lincolnshire, a tall arcade having been built on the north side of the nave, the low thirteenth-century piers on the south side were taken down and re-erected on tall plinths (207). At North Somercotes, Lincolnshire, slender cylinders of the thirteenth century are superposed on the bottom courses of massive Norman cylinders.

F. B. Skidbrook, Lincolnshire

More frequently an entirely new range of pillars and arches is built. Thus at Weobley the aisle walls are of the twelfth or thirteenth century, but the arcades of the nave are of a very different stone; one of the arches has the ballflower ornament, and the whole arcade is of the fourteenth century. So also at Cirencester one of the last things done was to rebuild the nave arcade; this was not done till *c.* 1515. At St. Stephen's, Norwich, the nave arcade was not rebuilt till between 1547 and 1550 (828). If the rebuilding of both arcades of a nave took place simultaneously, then the two arcades will be symmetrical. The presence of more arches on one side of the nave than on the other raises a presumption that the arcades are of different date; *e.g.*, at Masham, Yorkshire, where there are six arches on the north and five on the south side of the nave; and Bedale, Yorkshire, where there are four arches on the north and three on the south side. Sometimes the bays of the nave do not correspond with those of the aisle wall; *e.g.*, at Louth, where the latter are the broader; this is because at Louth a new aisle wall was built with broad bays to

hold broad windows; but when the pier-arcades were set back, instead of building new broad arches, the narrow thirteenth-century arches were reused.

Not even yet have we reached the end of the lateral expansion of the church. Alton church, Hants, was cruciform and without aisles; and over the choir was a central tower. Here the transepts were cut short, and an entirely new church with broad nave and chancel was built to the north, the north walls of the old church being pierced with arcades. At Lydd, Kent, the north aisle of the Anglo-Saxon church was cut away, and the nave was absorbed in the Gothic church.

So much for lateral expansion. The nave was also frequently lengthened, far more often to the west than to the east. Indeed in most churches the whole of this whirl of change played round the chancel arch; the chancel arch itself often retaining its position amid centuries of change, except that nearly always it was both raised and widened. At Youlgreave, Derbyshire, 27 ft. were added to the western nave. Frome church has been lengthened by four bays to the west; St. Mary Magdalen, Taunton, by three bays. At Grantham the four eastern bays of the nave have capitals, piers, and bases of the character of *c.* 1180; about a century later a detached tower was commenced to the west, and two new bays with work of later character were added to join it up to the old ones; then the early west front was removed. At Tilney All Saints, five arches are Norman; but the westernmost bay has arches of the thirteenth century. At Oundle the west tower was built close up to the west front; the latter was then removed, the gap being filled up in very rough masonry. At Wakefield the tower was built 10 ft. from the west end, and a new bay was added to join it up (273). At Louth the tower was at first detached, and a new bay, broader than the others, was built to connect it with the church. In such cases western prolongation of the aisles might follow; sometimes as far as the east wall of the west tower, as at Wakefield; sometimes as far as its west wall, as at Louth and Grantham; at Youlgreave, however, the ancient aisles of the nave were never continued westward.

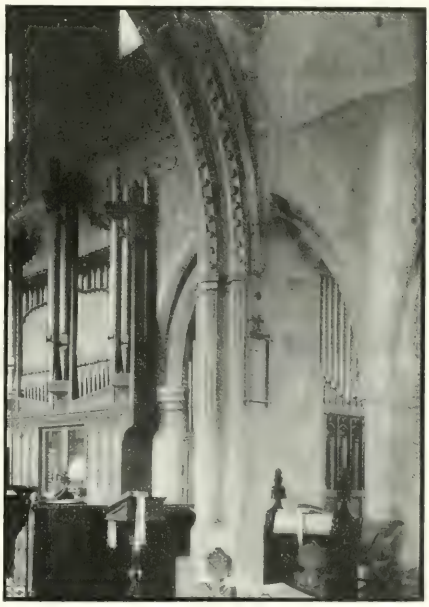
What was the object of this very frequent western extension? We may suggest that it was to provide a couple of bays at the west end of the nave to serve as baptistery. This is borne out by the fact that where the original benches remain, they stop short of the font, which in the later churches is placed in the centre of the nave about midway between its south and north doorways. This is the position of the magnificent late fonts of East Anglia, *e.g.*, New Walsingham[1] and Walsoken (192). That being so, one sees that after all the great churches were not too large for the small villages of East Anglia, such as Sall; take away two western bays of the nave as baptistery, reserve the aisles and the chancel chapels for special services at side altars, reserve the eastern half of the chancel for the celebrant

[1] Both these Seven Sacrament fonts are illustrated in the writer's *Fonts and Font Covers*, 242 and 243.

and his server and the western half for the singers,[1] and there is not too much left to accommodate the congregation at Mass.

When the nave was lengthened, the existing west front would not be disturbed till the new work to the west of it was completed. The result would be that when it was removed an unusually massive pier would be required in the position where the west wall had stood. Such piers may be seen in the naves of Grantham and Whaplode (191) (in the latter beneath the cross on the opposite wall).

As we have said, the position of the chancel arch usually remained unchanged. The responds of the chancel arch are sometimes all that remains of the earlier church. Here and there, however, though rarely, the nave was prolonged eastward at the expense of the chancel. But in compensation the chancel also, in such a case, would itself have to be lengthened to the east. At Raunds, Northants, the chancel arch was moved back in the fourteenth century and now cuts right across the centre of the westernmost arch of the south chapel of the chancel. At Walpole St. Peter, Norfolk, the whole of the chancel was thrown into the nave; the three eastern arches of the nave are each 2 ft. narrower than the western arches, and mark the extent of the former chancel. Sedgefield, Durham, seems to have built a new chancel and transepts in order to allow the nave to expand to the east. At North Somercotes, Lincolnshire, the two eastern arches of the nave are narrower and lower than the four to the west; moreover, they stand on a higher level, which is marked by a step; evidently this step was originally the western boundary of a chancel. At Woodford, Northants, the nave had originally but three bays; later on, a new chancel was built to the east with a new chancel arch, and the old chancel was thrown into the nave; the result is that the church now possesses two chancel arches, that of the new and that of the old chancel. Normally a parish church has from two to five arches in the



F. B. Raunds, Northants

[1] For the use to which the western part of the chancel was put, see the arguments adduced by the writer in his *Stalls and Tabernacle Work*, Chapter VI.

nave arcades; when the latter number is exceeded, there is a *prima facie* presumption that the nave has been lengthened either to the east or the west; the former prolongation explains the seven arches of the pier-arcades at Walpole St. Peter, Norfolk, and those of North Somercotes, Lincolnshire. At Skipwith, Yorkshire, the chancel arch has been entirely removed; in this case, on the other hand, the chancel seems to have encroached on the old nave.

So much for the growth of the nave; it expanded in every direction, but least to the east. The next growth to be noted is lateral expansion in the form of one or two cross arms or transepts. Abroad examples of the first rank may be quoted. Thus S. Tosca, Torcello, was originally a basilica of normal type; *i.e.*, a nave of seven bays with an aisle on each side of it; at a later period transepts were thrown out to support a central dome, which, however, was not erected. The old church of St. Mark's, Venice, which in 976 was seriously damaged by fire, was simply an aisled basilica with a nave of eleven or twelve bays. Then in the eleventh century transepts were built out as far as room could be got, viz., up to the north wall of the Doge's palace and up to the south wall of a little parish church; thus the form of the present St. Mark's was reached. If a large plan of St. Mark's be examined, the old basilican church may still be distinguished inside the present church. In the English parish churches the object of the transeptal extension was to provide altared chapels. In a parish church it by no means follows that both north and south transepts would be built, or that if both were built, that they were built simultaneously or of the same form or area. Frequently only one transept was built; thus Whaplode, Lincolnshire, has a tiny transept on the north; none on the south, unless the present tower occupies the site of a southern transept. The north transept of Felmarsham church, Bedfordshire, is nearly three times as deep as that on the south. Kidlington, Oxfordshire, has unsymmetrical transepts. At Solihull, Warwick, the northern transept is both longer and broader than the southern. Frequently a wealthy parishioner threw out a transept to be his mortuary chapel, and made it just as big or as little as he chose, without troubling about its relation to the other arms of the church.[1] Sometimes, however, parochial transepts are symmetrical; *e.g.*, at Weston, Lincolnshire, where the easternmost bays of each aisle were extended to north and south so as to form transepts, and at Sall, Norfolk, though the transepts there were built by rival

[1] "The real use of transepts was that of chapels, aggregate or sole; they were always and without exception furnished with one or more altars." . . . "On every side we find overwhelming proof, documentary and structural, that these cross limbs, where as usual there are two, or where, as occasionally happens, there is but one, were invariably of private foundation and built for private uses, being everywhere designed as sepulchral or chantry chapels for the founders and their families" (Rev. J. F. Hodgson in *Archæological Journal*, xliii. 68). He found that in the ten cruciform churches in the county of Durham all the transepts, except those of Norton and Darlington, were built by private persons, and mostly at different times, for their own private uses; he mentions eight Durham churches with single transepts; all of them private chapels.

families. The neighbouring churches of Cawston and Aylsham also have symmetrical transepts. In Herefordshire a curious local usage prevailed of carrying up into a gable the north or south wall, as the case might be, of the easternmost bay of the aisle, and inserting in it a larger window than the other north or south windows of the aisles, and larger than even the east window of the aisle, thus making a sort of quasi-transept as regards internal and external effect, but not on plan, *e.g.*, Almeley and Lyonshall; a somewhat similar treatment is seen at East Hendred (211).

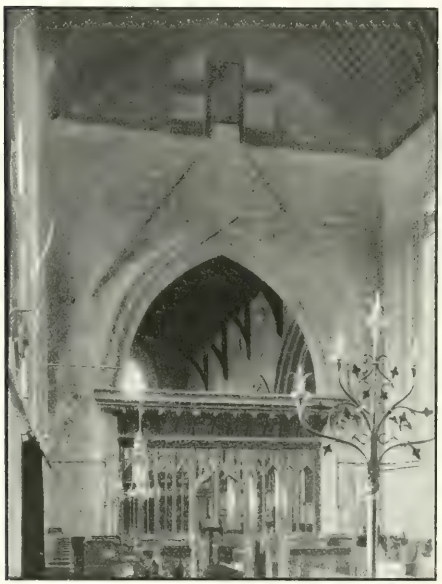
But the great extension in our English churches, great or small, was in the eastern limb. As to the Greater churches, out of twenty-one cathedral and abbey

F. H. C. East Hendred, Berks

churches which were planned like Gloucester, with processional aisle encircling a semicircular apse, and with chapels radiating from the processional aisle, all but six have had the eastern limb enlarged or rebuilt. Of thirteen Greater churches which were planned with three parallel eastern apses, or with some variant of the same, there is not one of which the eastern limb was not rebuilt except Peterborough cathedral, which itself, however, has been encircled to the east by chapels. In the parish churches eastern enlargement was equally common. Sometimes it was on a very small scale; *e.g.*, at Melbourne, Derbyshire, little more was done than to make the semicircular presbytery rectangular.[1] Usually the chancel was merely lengthened; *e.g.*, the Norman presbytery of Iffley has been prolonged so as to have two bays

[1] Illustrated in *Gothic Architecture in England*, 213.

instead of one, the eastern bay being an addition of the thirteenth century (241). Precisely the same is the history of the diminutive church of Farley, Surrey, where a straight joint marks the junction of the twelfth and thirteenth century work (234). At St. Mary's, Whittlesea, Dorchester, and Margate there are two piscinas in the chancel; the position of the western one marks the extent of the older chancel. There is sometimes left a curious proof that a chancel was originally shorter. If the responds of a chancel arch were massive, it was not unusual to pierce them with squints, so that at Mass the celebrant or server at an altar in the eastern bays of the aisle might follow the movements of the celebrant at the High altar.[1] Now at Ockham, Surrey, there is a squint looking not to the east wall where the altar now stands, but to the centre of the chancel; which, as the change in the string-courses shews, was doubled in length in the thirteenth century. Frequently the chancel was widened as well as lengthened; and at the same time it was heightened. This enabled the new chancel to be built round and over the top of the old one, inside which the services could thus go on uninterruptedly; the old chancel inside not being pulled down till the new chancel was completed. Sometimes a low, rough, blocked doorway is seen in the new chancel; this may be a builder's doorway left to get out the materials of the old chancel. Such a "builder's doorway" may be seen under the east window of Selby choir. Evidence of the existence of an earlier narrow and low chancel is often preserved above the chancel arch on the eastern face of the east wall of the nave. Thus at Tideswell, Derbyshire, the weatherings of a lower



F. B. Tideswell, Derbyshire

[1] On Sundays and double feasts no Masses at side altars were allowed to begin before the gospel or the offertory had been reached at the parish Mass at the High altar: otherwise parishioners might evade making their oblations by attending Masses said at an earlier hour. This was actually a cause for complaint at St. Mary's, Nottingham, in 1363. The squint would enable the server who prepared the altar or the priest who was waiting to begin his Mass, to see what was going on at the High altar, and time himself accordingly. In certain cases where the squint is immediately at the back of a respond, it may have been used by the ringer of the sanctus bell, where the bell was hung in a cot above the chancel arch. The rope was probably hung on one side of the arch, and the ringer stationed at the west side of the squint.—A. H. T.

and narrower roof than the present remain in this position (212), as they do also on the east wall of the central tower of New Shoreham, Sussex, and the west wall of the central tower of Wimborne minster (195). The design of the ruined choir of Howden, Yorkshire, is such that a very large part of the fabric could have been built and completed without touching or interfering with the services of the then existing chancel. Indeed all that remains of this fine structure, with the exception of the bases of the piers and the like, might have been formed round the old chancel without touching its walls.[1] One of the most curious examples of lengthening of the chancel is to be seen at Wrexham, Denbigh. Here a new nave was built in late days, and built in the manner of North Walsham, Norfolk, and St. Nicholas, Lynn, *i.e.*, simply as an aisled parallelogram with transverse oak screen instead of chancel arch. But apparently the Wrexham people would not put up with absence of chancel arch. So the mullions and tracery of the great east window were hacked away, and its sill was removed, converting it into chancel arch; and a little polygonal chancel was built to the east of it.[2] But the tracery was hacked away so imperfectly that stumps of it remain here and there to tell the curious story. If a parochial church became collegiate, almost as a matter of course the chancel would be rebuilt on a more spacious scheme for the reception of the stalls of the new body of canons. At Norton Subcourse, Norfolk, the chancel was enlarged till it was the same width as the nave; the chancel arch also was taken down and replaced by a screen (159). Vast numbers of big, lofty, broad chancels were built in the thirteenth and still more in the fourteenth century. Sometimes the new chancel quite overtopped the nave. Later the proportions were generally set right by raising the walls of the nave, and providing it with a clerestory. Several, however, of these hump-backed churches survive, with lofty chancel and low nave, *e.g.*, Stone and Littlebourne, Kent, and Norbury, Derbyshire (214). In France the combination of towering chancel and squat nave is so frequent that one almost notes an instance of the usual arrangement as abnormal.

F. F. Wrexham, Denbigh

[1] Rev. J. Petit in *Archæological Journal*, xxv. 189.

[2] Contrariwise, at Boston, when the present western tower was built on to the nave, the west window of the latter was converted into an eastern tower-arch.

When the chancel was widened, a difficulty often arose with the chancel arch. Naturally the chancel arches of the twelfth and thirteenth century were low and narrow.[1] But half the advantage of enlarging the chancel was thrown away, so far as the congregation in the nave went, unless the chancel arch was both heightened and widened. Many a fine chancel arch of the twelfth or thirteenth century has perished to make way for high and broad successors—sometimes ugly successors, as at Malpas, Cheshire (233).

F. H. C. Norbury, Derbyshire

Another way of fitting a parish church for collegiate use was to provide transepts as well as a new chancel. The nave of Aldeby, Norfolk, is of the twelfth century; in the following century, transepts and chancel were added.[2]

[1] There are exceptions; *e.g.*, at Steyning, Sussex, and Walsoken, Norfolk (192), where the chancel arches are late twelfth-century work.

[2] It is sometimes assumed that because a church usually gained in area and importance by being made collegiate with resident canons that it also gained by being appropriated to the benefit of a house of non-resident monks or canons. This is not so. Such a house regarded itself as under no obligation to do anything for the parish church except for its chancel, and then not unless it had

There are even cases where a complete new church was tacked on to the east of an old one. Barton-on-Humber had an Anglo-Saxon tripartite church of the Iffley type, with central tower; the Anglo-Saxon chancel has been pulled down, and a complete Gothic church has been built east of it, consisting of aisled nave and chancel; so that now the order, starting from the west, is Anglo-Saxon nave, Anglo-Saxon choir beneath central tower, Gothic aisled nave, Gothic chancel. At Newport, Monmouth, the church of St. Woolos was built late in the twelfth century, east of a little chapel, probably of peculiar sanctity from its connection with the local saint; this has preserved admirably the rich carving of the Norman west doorway. Something of the same kind may have happened at Devynock, Breconshire, where a large aisled fifteenth-century church has been tacked on to an aisleless building with massive western tower; this western portion is very rough and featureless.

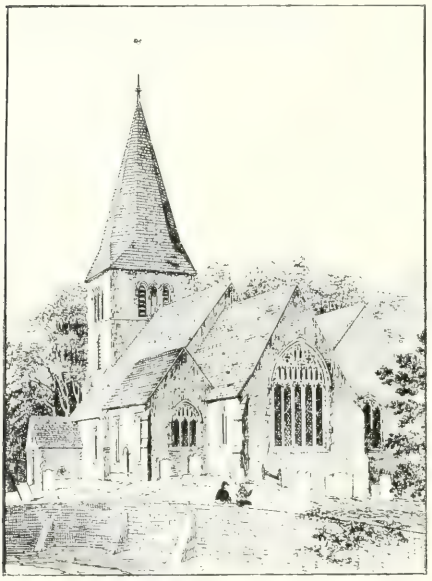
W. M Aldwincle All Saints, Northants

Moreover, the chancel, like the nave, expanded laterally by the addition of annexes to the north or south. These annexes are known as chancel-aisles. But they are not aisles; at any rate not in the sense in which the nave had aisles open to the congregation. They were closed off either by solid walls or by means of screens. When such an annexe is separated from the chancel by a wall, it is usually a sacristy. Sacristies occur, sometimes vaulted, even in the twelfth century;

acquired some manor in the parish to which was attached the obligation to keep the church chancel in repair. The non-residents regarded the parochial revenues merely as a milch-cow; as little as possible was done for the parish church, and that little as cheaply as possible, and the work was postponed as long as possible, till the bishop really would not put up with the delay any longer.

"There is very little evidence of any connection of the Religious Orders with parish churches except where, as at Leominster, Ripon, and Southwell, a church was both monastic and parochial. Even when a house of monks or canons owned the advowson and the rectorial tithes, history is silent, so far as Shropshire goes, as to the monks or even the regular canons taking any parochial charge themselves; so far as we can tell, the monks or canons appointed a secular priest as vicar, and not one of their own body. Nor can we point to any great benefaction on the part of a house of monks or canons to the parish to enable a church to be built. It is tempting to suppose that, if a religious house appropriated the tithes of a church and additions to the fabric took place soon afterwards, the work was due, in money or in skilled supervision or in both, to the monks or canons; but in most cases, if not all, except where chancels are concerned, such an inference is not supported by evidence." Mr Cranage's *Churches of Shropshire*, 1025.

but they do not become common till the fourteenth and fifteenth centuries. Usually they are to the north *e.g.*, Aldwincle All Saints, Northants (215); sometimes to the south, occasionally beneath the chancel, as at Thirsk; or east of it; *e.g.*, Lavenham (182) and Hawkhurst, Kent (650); sometimes the High altar was placed several feet away from the east wall, the space thus gained being employed as a sacristy; *e.g.*, Sawley and Tideswell, Derbyshire.[1] Sometimes they have an upper room, in which the sacristan slept. When strongly barred, the sacristy was also a treasury. Sacristies often contain an altar. To secure their contents against fire, they were often vaulted; that at Hemel Hempstead has a Norman cross-ribbed vault. At Sutton St. Mary, Lincolnshire, the upper story is vaulted: this sacristy is styled *vestiarium* in a document of 1416; it projects eastward from the north-east corner of the chancel; above it is a chamber (221).



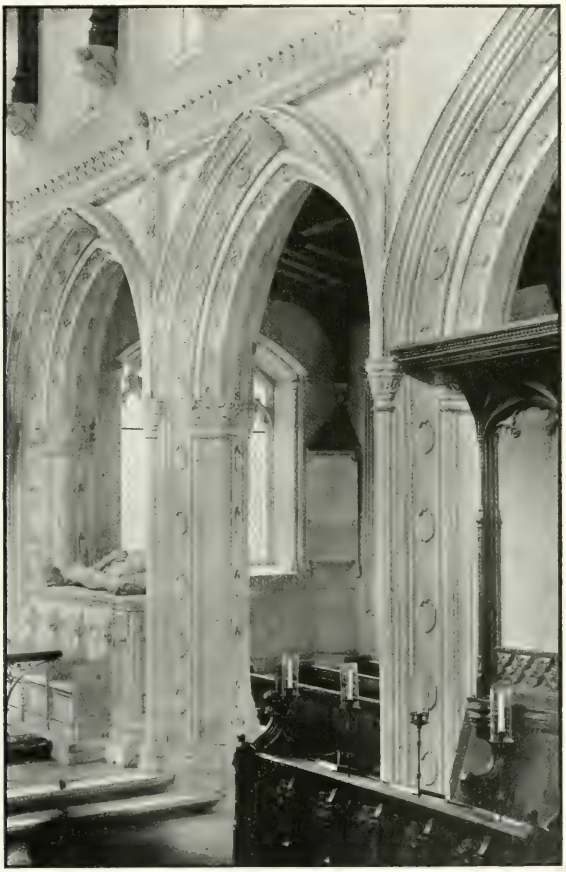
E. F. Merstham, Surrey

By far the greater number of the additions to chancels were built as chapels.[2] Sometimes they were erected by a wealthy individual; sometimes by one of the various town guilds, *e.g.*, at St. Thomas', Salisbury; sometimes by the chief municipal guild which governed the town and was practically town council. No doubt every guild liked as far as possible to have attached to the old church what was practically its own little church, where it could go in state, like modern Odd Fellows, and where deceased members of the guild could have masses said for the repose of their souls. Such is the chapel of the Guild of the Holy Trinity in Newark parish church; and the three-storied porch of Cirencester church. The number of chantries, *i.e.*, endowments made for such purposes, was often very large. In the parish church of St. Thomas of Canterbury at Salisbury there were

[1] At Higham Ferrers and Rushden, Northants, the end of the north aisle is walled off in this way. Probably in neither of these two cases is the arrangement original: the screen wall at Rushden has evidently been moved to its present position. At Tansor, Northants, the east end of the north aisle was constructed as a sacristy in the thirteenth century.

[2] Devon chancels built in the fifteenth century were invariably aisled.—F. E. H.

twenty-seven chantries. The smaller ones no doubt would be attached to existing altars. But every person or guild who could afford it would like to



G. G. B. Wingfield, Suffolk

have a separate altar and a separate chapel for it. It is the addition of these innumerable chantries more than anything else that has transformed so much the aspect of our parish churches. So numerous are they at times, that the old

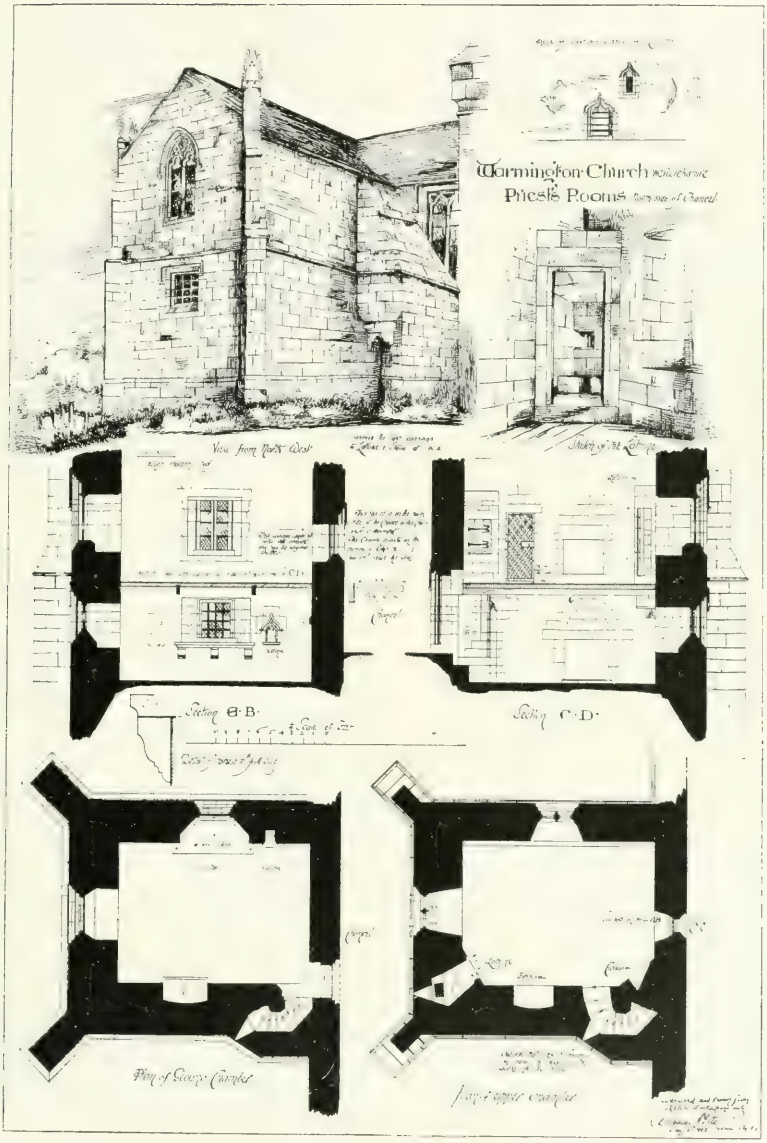
church is quite hemmed in and lost to view, *e.g.*, Burford. In some districts, however, chancel chapels were provided when the church was built and are found symmetrically disposed; *e.g.*, in several churches of Thanet and the neighbourhood in the latter years of the twelfth century, and frequently in East Anglia; *e.g.*, Lavenham (182), Southwold (193), Lowestoft (2). More often these chapels are of all shapes and sizes, and not seldom set askew. And they are tacked on in all directions; to the nave and to the chancel, to the western bays of the nave and to the eastern bays. But the favourite position was as near as possible to the High altar, and by preference on the sunny south side, as at Wingfield, Suffolk, where the chantry chapel opens to the chancel by arches studded with the fetterlock and the Stafford knot (217). At East Hendred (211) is shewn a chantry chapel east of the transeptal termination of the south aisle of the nave; the chancel of Merstham, Surrey, has a chapel on either side, grouping nicely with the chancel (216). A chancel chapel has disappeared at Ovingdean (235).

F. H. C. Wingfield, Suffolk

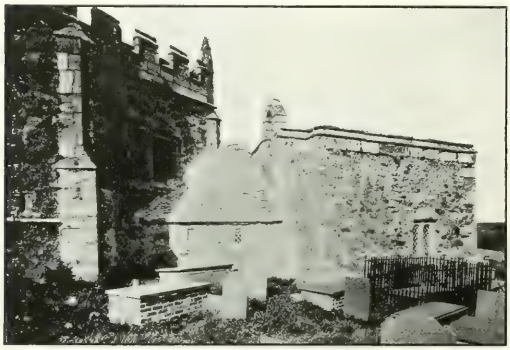
Here and there priests' rooms were added; usually a sitting-room on the ground floor, and a bedroom above it;[1] *e.g.*, at East Horndon, Laindon, and Great Horkesley, Essex, and Terrington St. John, Norfolk (222). In the last the tower was originally detached from the church; later on it was coupled up to the nave by a priest's room three stories high. Priests' rooms are said to occur at Wath, Kirkby Malzeard, Well, Wensley, South Cowton, Yorkshire; Leverton, Lincoln; Wingfield, Suffolk; Adderbury, Oxon.; Warmington, Warwickshire[2] (219), and elsewhere; but it is usually impossible to distinguish a priest's rooms from those of a sacristan; and the presumption is that they are the latter rather than the former. At St. Mary, Guildford, there is a staircase which may have

[1] At St. Peter Cheap the vestry had three chambers, which in 1533 were occupied by the parish priest, Sir Thomas Dybon, and Sir William, the "morrow-mass" priest.

[2] Note at Warmington the openings on both floors into the chancel. At Wingfield the small opening from the first floor is seen above the tomb (218); the other illustration shews the interior of the upper chamber (221).


Warmington Church
Priest's Rooms
View from North West
Section B·B·
Section C·D·
Plan of Ground Chambers

led to a priest's room above the vault of the chancel; it is possible that such rooms were not uncommon above chancel vaults, where such occurred; *e.g.*, at Blakeney, Norfolk (898), where there is an east window in the gable of the chancel. Where a fireplace or flue occurs in a room over a porch, as at Uffington, Berks.; Mettingham and Lowestoft, Suffolk; Cromer, Norfolk; Grantham, Lincolnshire; Southwell, Notts.; Nantwich, Cheshire; Wrotham, Kent, and Marldon, Devon; this may have been the chamber of a chantry priest or sacristan; so also when a fireplace or flue occurs in a tower; as at Buckminster, Leicester; Brailes, Warwickshire; Battlefield, Salop; Ranworth and Thorp Abbots, Norfolk.[1]

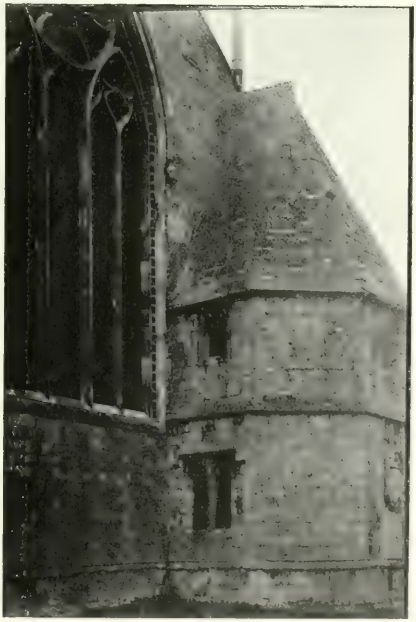


I. 1. Llaneilian, Anglesea: Anchorite Cell

As early as the sixth century there were anchorites, anchorets, or recluses in Gaul: the cell of an anchorite is known as an "anchorage," "ankerhold," *domus inclusi* or *reclusorium*; with us the establishment of ankerholds in connection with churches appears to have been as early as the establishment of Christianity in Saxon England. In the Saxon Chronicle, A.D. 657, at the consecration of Peterborough abbey, the Abbot is reported to have said to King Wulfhere,

[1] It is very difficult to prove that they were priests' rooms, *e.g.*, at Wath, and there is reason to assign them, where they occur in parish churches, to the sacristan. The incumbent of the church certainly did not use them, as he had his own rectory or vicarage house; while almost invariably chantry priests on permanent foundations had their own messuage or *mansio* assigned to them as part of their property. Thus we know exactly where all the chantry priests of the Nottingham churches lived, each in his own house. At Sibthorpe, by the foundation ordinances, the parish clerk was ordered to sleep in the church: the sacristan at Southwell had the same duty enforced by Abp. Romeyn's ordinances in 1293; at Southwell he was a priest with a prebend attached to his office. Terrington St. John is rather different. The church was merely a parochial chapel of Terrington St. Clement, and the house between the church and tower may have been used by the chaplain, whose endowment seems to have consisted of a stipend at the discretion of a vicar. Where the chantry was only a stipendiary service, with a money endowment, it is possible that the priest may have been allowed to occupy such a room as that above the north chapel at St. Mary's, Beverley; but in such cases documentary evidence should be forthcoming. At Melbourne, Derbyshire, there are traces of a room over the chancel; also at Steetley chapel, near Worksop. At Irthlingborough, Northants, there are rooms at the west end of the church and in the tower; the clerk or sacristan, who had to ring the bell, probably slept in the tower.—A.H.T. At St. Margaret's, Westminster, 6d. was paid in 1495 "for makyng of a bedde in the vestry for the clerkys."

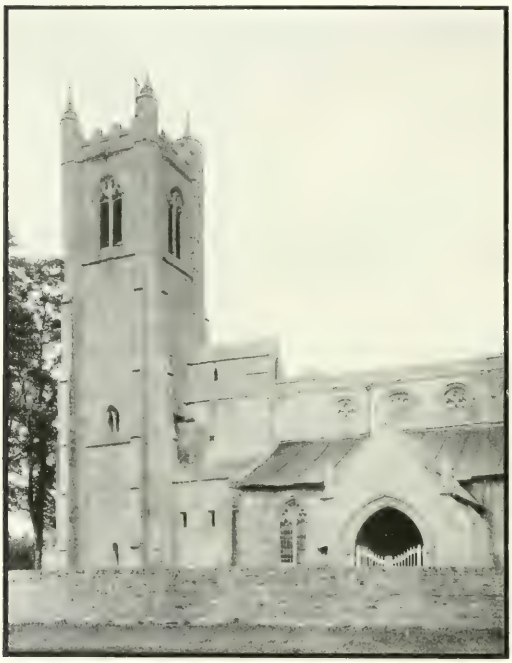
On priests' rooms see *Journal of British Archæological Association*, xxiv. 251; also Bloxam's *Gothic Architecture*, ii. 163-185, and E. Godman's *Mediæval Architecture in Essex*, 14-22.



Wingfield, Suffolk
Hartlip, Kent

Walpole St. Andrew, Norfolk
Sutton St. Mary, Lincolnshire

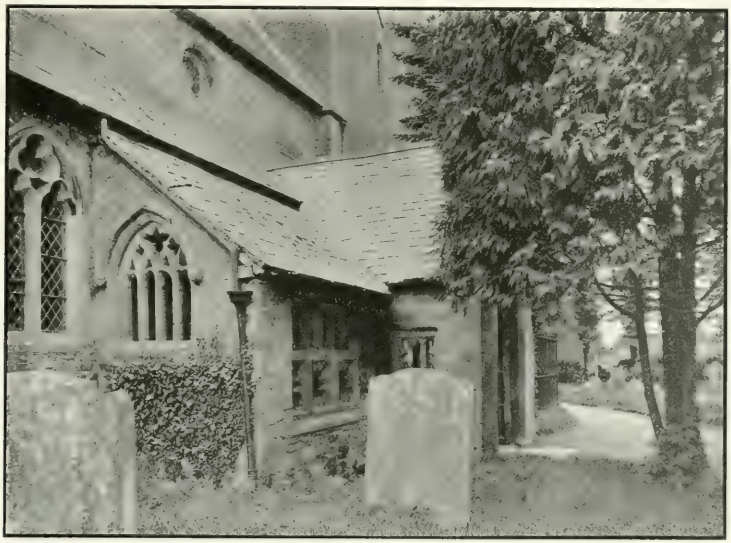
"I have here holy monks who wish to spend their lives as Anchorites if they knew where. And there is an island here which is called Anchoret's Isle, and my desire is that we might build a Minster there to the glory of St. Mary so that those may dwell therein who wish to lead a life of peace and rest." The anchorite is not to be confounded with the hermit, who was not a recluse, but usually devoted himself to some useful work; *e.g.*, to shew travellers the fords over rivers; one of them, Richard Reedbarowe, built a beacon on Spurn Point in 1428 to guide ships into the Humber. Anchorites, when they took up their abode in cells, were conducted thither in procession and installed with a solemn service; after this the doorway by which they entered was built up or closed and sealed.[1] In the Exeter pontifical



F. F. Terrington St. John's, Norfolk

[1] A very large number of notices of the enclosure of anchorites, chiefly female, are found in bishops' registers. There was a cell for two anchorites founded by Sir William Fitzwilliam near Doncaster, with an endowment of ten quarters of wheat yearly. Archbishop Greenfield permitted a nun of Coldingham, Beatrice of Hodsock, who, on the dispersion of her convent by the Scots, had become an anchoress in a house near the bridge at Doncaster, to receive half this endowment (*Letters from Northern Registers* [Rolls Series], pp. 196-8). In 1356-7 Margaret Kirkeby, an anchoress at Leyton in Richmondshire, made supplication to Archbishop Thoresby "quatinus, cum dicta reclusa in loco vbi iam existit sacramentum altaris dominici videre non valeat nec audire, prout ipsius deuocioni insidet, anime sue conuenit et saluti, eam ad alium locum deuociorem transferre graciosius curaremus." Thoresby issued a commission to the abbots of Jervaulx and Eggleston to transfer her "vsque locum vicinum ecclesie parochiali de Aynderby [Ainderby Steeple] . . . inibi ponendam et more pristino includendam, vbi cotidie illud sacramentum solempne videre et alia diuina obsequia audire poterit vt effectat" (York Epis. Reg., Thoresby, f. 287). From Linc. Epis. Reg., Dalderby, it appears that a commission was issued to the Abbot of Croyland and Prior of Peterborough in 1335, to enclose Emmot Tonge of Bourne "in quandam domum contiguam" to St. Paul's Stamford (Memoranda, f. 187d). In Linc. Epis. Reg., Gray (f. 186), is the certificate returned by the Abbot of Thornton, noting the enclosure of Beatrice Frankes, a nun of Stainfield priory, who petitioned to be enclosed (arcius recludi) "in quadam domo contigua ecclesie parochiali de Wynterton . . . vt sic sub

of the fourteenth century, there is a special service for the walling up of anchorites; "*Reclusio Anachoritarum*;" the sacrament of extreme unction was administered, and the prayer of commendation for the soul of the recluse was offered; parts of the service for the burial of the dead were also read, the anchorage being regarded as a sepulchre, in which the recluse would henceforth be dead to the world.[1] As a matter of fact the anchorite was by no means dead to the world. Henry the Fifth, on his father's sudden death in the Jerusalem Chamber, went to the Westminster anchorite for ghostly counsel: it is likely enough that some of the anchorites and



G. G. B. Kingsland, Hereford

ankeresses became shocking old gossips, as much in request for charms and potions as for ghostly counsel. There were plenty of candidates for the profession; at Norwich there were at least nine ankerholds attached to various churches; even monks, friars, parish priests, and ladies of rank at times entered ankerholds. Some

huiusmodi arta via anachoritica creatorem suum valeat liberius contemplari." On St. Vincent's day 1434-5 the abbot released her from her vows at high mass in Winterton church, enjoined new ones, and "in quadam domo et clausura ex boreali parte dicte ecclesie constructis recludentes, et hostium eiusdem seris, vectibus et clauibus firmantes, in pace et quietudine spiritus, sicut creditur a pluribus, dimisimus in gaudio Saluatoris." Numerous other instances may be adduced.—A. H. T.

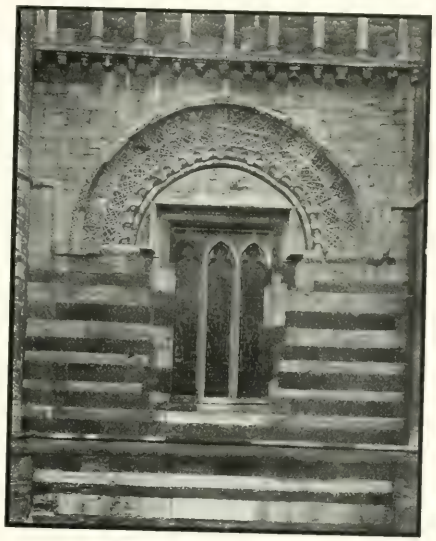
[1] A similar service occurs in the Sarum Missal; as also a separate and distinct service for hermits, *Benedictio Heremitarum*.

of the ladies had a maid locked up with them; Lady Julia, the ankeress at St. Julian's church, Norwich, in her old age had two maids to look after her. At the west end of the north aisle of Chester-le-Street, Durham, may still be seen the rooms of a whole cluster of ankeresses. At Aldrington, Sussex, the parish priest resigned his living, and, with the consent of the bishop, built a cell against the wall of the church, and went and lived in his *reclusorium*, which still exists; it is a room 29 by 25 ft., with ingress to the chapel of the Blessed Virgin on the north side of the church. It is obvious that the anchorages must have been of varying plan and dimensions; but the normal type is a very small lean-to shed; it had one small barred window or shutter through which food was passed in; "our recluses have grates of yron in theyr spelunkas and dennes;" and there was always an opening in the church wall through which the recluse had a view of the celebrant at one of the altars inside the church; there was often also a small window to light the cell. The Domus Inclusi sometimes consisted of a single cell, sometimes of more than one; in the latter case it afforded accommodation for an attendant. It sometimes possessed an altar of its own and often a fireplace. To persons who did not care for exercise it would be far from intolerable. An exceptional anchorage is that mentioned in the *Rites of Durham*. Here the anchorite seems to have lived on the platform of a rood loft spanning the north aisle of the choir, and having the High altar a few yards to the south; "in ancient time it was inhabited with an anchorite, whereunto the priors were wont much to frequent both for the . . . marvellous fair rood with the most exquisite pictures of Mary and John . . . as also to hear the Mass, standing so conveniently unto the High altar." Among anchorages which are said still to exist, or of which traces remain, may be mentioned those at Patricio, Herefordshire; Bengeo, Herts.; Chipping Ongar, Essex; Walpole St. Andrew, Norfolk (221); Edington and Boyton, Wilts.; Compton, Leatherhead, Shere, Bletchingley, Chessington, Surrey; Aldrington and Hardham, Sussex; Chipping Norton, Oxon.; Rettenden, Essex; Thirsk, Yorkshire; Chester-le-Street, Durham; High Wycombe, Bucks.; Gateshead; Ludlow, Salop; Clifton Campville, Stafford; Hartlip, Kent (221); Llaneilian, Anglesea (220); and perhaps Kingsland, Herefordshire (223); and one over the sacristy at Oundle; it is probable, however, that some of these were not rooms of an anchorite but either of a chantry priest or, more likely, a sacristan.[1]

[1] On the subject of anchorite and anchorages see Fosbroke's *Consuetudinal of Anchorites and Hermits*, 3rd edition, London, 1843; Cutts' *Dictionary of the Church of England*, 318 and 501; Rock's *Church of Our Fathers*, 2nd edition, iii. 114; *Ecclesiology*, being extracts from the *Gentleman's Magazine*, pp. 207 and 209; Bloxam's *Gothic Architecture*, ii. 163, 182-184, and "*Domus Inclusi*" in *Associated Societies' Reports*, 1854; Bridgett on the *Eucharist*, ii. 180; *Testamenta Cantiana*, 2, xv.; Jusserand's *English Wayfaring Life in the Middle Ages*; Dean Stanley's *Historical Memorials of Westminster Abbey*, p. 383; Sparrow-Simpson's *St. Paul's Cathedral and Old City Life*, p. 215; P. M. Johnston in *Archæological Journal*, lxv. 49; Boutell's *Christian Monuments*, 49; Walcott's *Sacred Archæology*, 27 and 31; for Bengeo see *Archæological Journal*, xliv. 26; for Chipping Ongar, *Archæological Journal*, xlv. 284; for

Sometimes there was near the church a detached chapel. At High Wycombe the chancel belonged to the abbess and convent of Godstow. The townsfolk, therefore, built their Lady chapel detached a little north of it, like the Elder Lady chapel at Bristol cathedral. Later on its south wall was taken down; it was widened, and made to open on to the chancel, just as at Bristol also.[1] It is probable that chapels, originally detached, are now incorporated in the structure of the churches of Burford and St. Mary, Leicester.

Nor is the western tower exempt from mutation and change. Comparatively few churches were built with western towers before the fourteenth century. Before that time, and not seldom afterwards, they probably had bell-cotes, of which numerous examples survive. At Westhall, Suffolk, a beautiful Norman façade has been made to serve as the east wall of a later tower, owing to which it is in a state of excellent preservation; a similar example occurs at Much Wenlock, Salop. In some examples in Northants traces of the original bell-cote may be seen in the east wall of the tower; or traces of the small gable windows which originally lighted the nave from the west.



C. F. N. Northampton St. Peter

At Northampton St. Peter's the nave was shortened, and the Norman western tower rebuilt one bay further east in the sixteenth century; in the west wall is reset the Norman doorway with a sixteenth-century window beneath (225).

At every period there were built churches with clerestories; Towyn, Merioneth; St. Margaret at Cliffe, Kent; Whaplode, Lincs. (191); are twelfth-century examples. But in most districts they are quite rare till the fourteenth century. In Herefordshire, however, they are a normal feature of thirteenth-century design, not only north and south of the nave, but above the chancel arch. In later days they were added in great numbers.[2] Sometimes it was that a big new chancel had dwarfed the nave;

Hardham, *Sussex Collections*, xliv.; for Edington, *Archæological Journal*, xlv. 49 and 50; for *Patricio*, paper by Mr F. R. Kempson, *Woolhope Club*, 1885; for Clifton Campville, *Birmingham Arch. Transactions*, 1901, p. 5.

[1] *Records of Buckinghamshire.*

[2] In Devon clerestoried churches are very rare: Cullompton is an exception.—F. E. H.

more often that light had been cut off from the nave. A nave previously unaisled suffered greatly in its lighting even if the aisles added were narrow; if they were widened, it suffered still more severely, *e.g.*, at Grantham. If, again, chapels were built outside the aisles, the nave was plunged still further in gloom. Even worse was the state of things when its best source of light, the big west window, was blocked, as at Boston, by the erection of a western tower. Far the best remedy was to raise the nave walls, and to insert in the upper part of them a clerestory. Hundreds of churches have an early pier-arcade and a late clerestory, very often of the fifteenth century, *e.g.*, Stratford-on-Avon. Sometimes a new clerestory was added, higher up than the old one; *e.g.*, Dilwyn (229). Even the chancel occasionally received a clerestory, *e.g.*, in the large parish churches of Wakefield and Newark. Usually the windows of the new clerestory were set symmetrically either with the piers or with the apexes of the arches below; but sometimes, when there was a deep respond at each end of the arcade, the clerestory was divided up into equal bays regardless of the position of the piers and arches inside; from outside the church it would look all the better for being so disposed.

But the addition of a lofty clerestory dwarfed many a tower, which before had been quite able to hold its own. At Oadby, Leicestershire, the tower and spire are of the fourteenth century; the addition of a clerestory in the fifteenth century raised the nave to the full height of the tower. Many a tower doubtless received another story to give it predominance over a clerestoried nave; or, what redressed the balance still more effectively, a spire was superposed. Thus at Burton Latimer, Northants, a fourteenth-century spire was added to restore the thirteenth-century tower to its relative importance, which it had lost by the addition of a clerestory to the nave; *cf.* Masham, Yorkshire.

The roof, too, had a long history. With care good oak lasted for ever; but if the wet got at it or it was not properly ventilated, it decayed. Weatherings of two or even more roofs may often be observed; there are three on the east face of the west tower of Gedney, Lincolnshire; *cf.* Tewkesbury (42) and Wimborne (195).

Improvement of the drainage of the roofs often brought about a complete change of the external aspect of the church; for overhanging roofs and dripping eaves substituting gutters with gargoyles, masked by a parapet or battlements.

Thus the history of the parish church is a history of constant growth and accretion; horizontal growth of aisles and transepts and chapels and tower; vertical growth of clerestory, tower, and spire. But this is not the whole story. Not every church grew larger; some grew less; some even passed beneath the sod; not a few linger in lonely pasture fields away from dwellings of men, ready to shelter villagers whose village perished long ago, or was transferred elsewhere; *e.g.*, Hales, Norfolk; Ashby, Suffolk; Skidbrook, Lincolnshire. All sorts of strange things befell them. Sometimes even the nave has disappeared; at Northleigh, Oxon., owing to the destruction of an aisled nave, what was

formerly a central tower is now a western tower; on its western face may be seen the weatherings of roofs of a nave and of a north aisle. The ground floor of the Anglo-Saxon tower of Broughton, Lincolnshire, was originally the body of the church. Frequently the chancel has gone, or remains only in ruin, as at Orford, Suffolk. This was so very frequently, if the nave was parochial and the chancel monastic.[1] Bramber church, Sussex (228), originally had chancel, transepts, and central tower; chancel and transepts have gone; the central tower remains; its northern, eastern, and southern arches are walled up and it has become chancel; a close parallel exists at Conisholme, Lincolnshire. At North Somercotes, Lincolnshire, the altar is flanked by doorways, of which one is the priest's doorway, the other led into a vestry; the position of the doorways raises the presumption that the chancel was originally longer; recent excavations have unearthed the foundations of side walls east of the present east end.

F. H. C. Northleigh, Oxon.

Parochial chancels were now and then vaulted, *e.g.*, St. Mary's, Guildford, and Stoke d'Abernon, Surrey. But if it was decided later on to provide the chancel with a clerestory, the vault had to be removed, as at St. Mary, Shrewsbury.[2] Sometimes an east end becomes ruinous, and the chancel was truncated, the east window being reset, as at

[1] Chancels of impropriated churches, where a monastery was rector, are often late in date and poor when compared with the nave, or, if they have not been rebuilt or repaired at a later date than the nave, are insufficient and disproportionate in size. Thirsk, where Newburgh priory was rector, is a case in which the monastery provided a poor chancel some years after the parishioners had built a noble nave. Melton Mowbray (Lewes priory) and St. Mary's, Nottingham (Lenton priory), are examples of the second kind. Monasteries seldom repaired chancels till they were forced: the case of Croyland and Wellingborough is mentioned in *Misericords*. The chancel of Tuxford, Notts., was rebuilt in the fifteenth century by Newstead priory, who probably let the old one get into ruin first. Harringworth, Northants (Elstow abbey), is a good instance of a chancel cheaply repaired in the fifteenth century. Monasteries managed their money badly, were always in debt from the thirteenth century onwards, and can hardly be blamed for economy in this direction. The invariable excuse for appropriations was that the religious house, without some addition to its income, would be reduced to bankruptcy.—A. H. T.

[2] Cranage's *Churches of Shropshire*, 930.

Horton Kirby, Kent, and St. Mary, Guildford. The chancel of Elm church, Cambridge, has lost 16 ft.

Transepts, too, had their turn to fall. Some were removed altogether. Several, as has been pointed out above, were absorbed into the aisles of the nave.

Many a church has lost an aisle or aisles; the old pillars and arches are often found built up and plastered over in the wall; *e.g.*, North Thoresby, Lincolnshire; Little Bookham, Surrey; Ovingdean, Sussex (235); Chelveston, Northants; examples are numerous in Lincolnshire.

By far the greatest loss was that of chantry chapels. In 1529 an Act was passed

L. N. Bramber, Sussex

against the foundation of new chantries or stipendiary services; and on the accession of Edward VI. all chantry endowments were confiscated. Naturally, when both priest and endowment had disappeared, many a chantry chapel fell into disrepair, and was pulled down that the parish might not be put to the expense of keeping it up.

Least common was the loss of clerestory windows. Gloom was the curse of parish church and cathedral alike in the Middle Ages. And when the gloom had been banished by the addition of a lofty clerestory, the parish was very loth to lose the new top lighting. Yet it was sacrificed at times. At Grantham the aisles of the nave were widened so very much that they had to be heightened as well. The result was that they blocked the twelfth-century clerestory; the remedy was to build another clerestory higher up, as at Sutton St. Mary, Wimborne minster (195), and

elsewhere, but this was not done. At the little church of St. Michael, outside St. Albans, on the south side of the eastern bays of the nave a chapel was built which was as lofty as the nave; accordingly the eastern windows of the southern clerestory now look into the chapel, not into the open air (243).

Another potent factor in the metamorphosis of the parish church is still to mention. It is trouble with a central tower. At the beginning of this chapter it was pointed out that churches of the third and fourth types were either tripartite or cruciform, with a central tower. Now as early cruciform churches had no aisles, the four broad arches which carried the central tower over nave, chancel, and transepts were abutted by solid walls; to the west by those of the nave, to the east by those of the chancel, to the north and south by those of the transepts. Later on aisles were often added, to the nave or the chancel or the transepts, or to some or all of them. Imagine that a north aisle has been added to the nave of a cruciform church. It follows that the northern arch of the central tower, instead of being abutted to the west by a solid wall, is now abutted by a row of open arches; to that extent its stability is impaired. Moreover, in such a case an arch would be cut into the west wall of the north transept, that the aisle might communicate with the transept; this impaired the stability of the western arch of the central tower. In such a case the north-west angle of the central tower now rested merely on an isolated pillar of masonry. What was done here might be done at the other angles of the tower. And each such process made the tower still more shaky. Sometimes no doubt it tumbled down, as did many a central tower of the great cathedral and abbey churches. Sometimes cracks would appear, and the parish would take it down. Sometimes, however, it would be taken down, even if quite sound, simply because its piers were so massive that they obstructed the view of the High altar from much of the nave, especially if the nave had been widened or had been given aisles. Anyhow, many central towers have disappeared. Thus at St. John, Glastonbury, which now has a fine western tower, there were discovered

F. B. Dilwyn, Hereford

in 1859 the foundations of a central tower. Newark retains piers for a central tower; its present tower and spire are western. Numerous churches in Northants were planned, like Rothwell, for a central tower. At Oundle there is a western tower and spire; but in the eastern clerestory of the nave there are alterations which point to the former existence of a central tower. At St. Mary Redcliffe, Bristol, the lower courses of a central tower remain beneath the roof. A contract, signed the 26th of January 1508-9, is reprinted in the *Records of Buckinghamshire*, by which "it is covenanted, barganed and agreed that William Chapman shall take down to the Grownde the olde Stepull nowe stondying and beying be twene the quyer and the body of the Chyrche of Wycombe." Where the central tower was not removed, it was a constant source of mischief. The whole history of Horbling church, Lincolnshire, is but one series of reconstructions due to injury done or threatened to be done by the central tower. Very curious is the history of Petersfield church. This, *c.* 1100, had an unaisled nave, chancel and transepts and a central tower; late in the century a western tower was added; finally, in quite late times, the west, north, and south walls of the central tower were removed; the wall in which one now sees the chancel arch is really the inner face of the east wall of the ancient tower[1] (230).

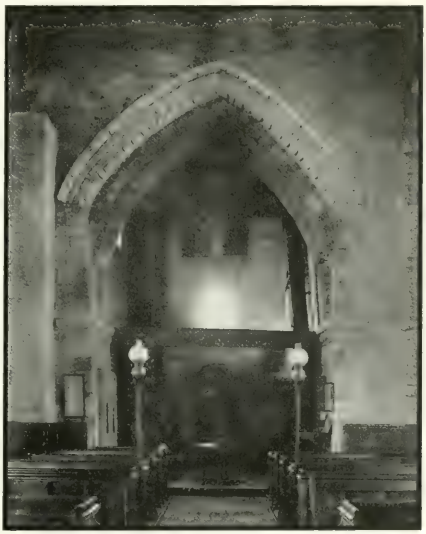
E. K. P. Petersfield, Hants

Very rarely does a fallen or damaged central tower appear to have been rebuilt. Such a job in a poor parish might occupy several years, and during all that time the daily use of the church would be suspended or seriously interrupted by the work going on in the centre of it. The obvious thing was to build a new tower, and to build it detached from the church, so that the work on it should be clear of the services within the old walls. Usually it was built to the west of the nave. If it was built close to the west front, then, when the west front of the nave was pulled down, the western arcades of the nave would be joined up to it by a deep respond. If a little further still, then by a narrow arch. If still further, then by an arch of the same span as the rest, or broader. If further, then by two or more arches. The character of the western arches or the depth of the responds often

[1] MS. paper by Miss E. K. Prideaux, and *Victoria County History of Sussex*.

tells us much about the history of this end of the nave. At Swine, Yorkshire, a big central tower is shewn in old prints. It was originally a cruciform church, with central tower, belonging to Cistercian nuns. On the suppression of monasteries and nunneries it lost its nave, and later on its transepts and central tower; then the present western tower was built.

In addition to all the greater transformations of the church there are also numerous transplantations to be noted, which are to be guarded against lest we be led to erroneous conclusions. We have spoken above of the very frequent transplantation of doorways; also of transplantation of windows. Pillars and arches also were removed and reset. In each transept of York minster a narrow arch now stands where was once a broad arch, and *vice versa*: this was effected without taking down the triforium and clerestory above. After a great fire all the pillars in Carlisle choir were taken down and replaced by new ones (280) in the fourteenth century, leaving intact the thirteenth-century arches above. At Earl's Barton, Northants, the western arch was raised and clumsily converted into a pointed arch; plainly it was originally a Norman semicircular arch (231). Similarly in the transept of St. Mary, Beverley, thirteenth-century arches have been taken down and reset higher up. There are numerous other cases. If there is any one member which one expects to remain *in situ*, it is a buttress. But at Dorchester priory the south-west buttress certainly seems to have been moved from some other position in the church (258). And at Moulton, Lincolnshire, the south aisle was originally about 10 ft. wide; now its buttresses support the wall of an aisle widened in the fourteenth century. Capitals, too, have been reused. In the choir clerestory of St. Margaret, Lynn, is a wall-arcading. This clerestory was heightened in 1481; the foliated capitals of the thirteenth century were retained, but are reset at a higher level. The turret stairs on the south side of Spalding are a transplantation. Windows above all are deceitful. The east window at Wrexham, Denbigh, has become a chancel arch; at Boston the west window is now the arch of the western steeple. At Oundle the chancel walls were raised, the window heads removed from their jambs and rebuilt



C. F. N. Earl's Barton, Northants

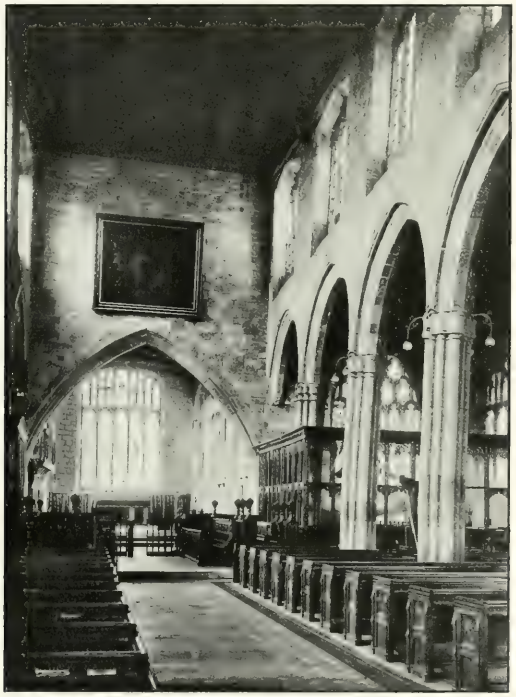
higher, the old sill and jambs being left and new jambs built in the intervening space; thus the windows have an elongated lancet form most peculiar in late Gothic (232). In the remodelling of Horton Kirby church, Kent, in the fourteenth century, the head of each little pointed lancet window on the north side of the chancel was converted outside into a cusped ogee arch; inside it is a normal lancet. When the outer or parochial north aisle of Romsey nave was pulled down at the Dissolution, the arches of the inner aisle were built up, and the rectilinear windows of the destroyed aisle were inserted in them. About the same time, probably, the eastern Lady chapel was pulled down; the two arches which led into it were walled up; and in them were inserted two windows from the lost Lady chapel. Often, to get more light, three lancet windows were converted into a single big traceried window. But sometimes in the jambs of the new window are seen shafts, molded bases, and molded capitals, which are plainly thirteenth-century work. They must have belonged to the outer jambs of the two lateral of three original lancet windows. This is the case with the east window of Walsoken chancel, with the west window of West Walton, Norfolk, and with the south window of the south transept of Minster in Thanet. Ockham, Surrey, possesses a magnificent septet of graduated lancets in the east wall of the chancel; but there remain traces of the Norman triplet which they superseded.[1]

J. B. Oundle, Northants

Frequently, also, windows of the eleventh, twelfth, and thirteenth centuries were at a later date filled with tracery. Scores of early windows at Wells and Peterborough and elsewhere retain their late tracery; from hundreds of windows it has been hacked away by the great architects of the Victorian restoration. In this way we lost the lovely geometrical tracery of the western lancets of Ripon. "Solitudinem faciunt; restaurationem appellant"; with each blow of the hammer another bit of history is destroyed; it is only necessary to look at the illustrations of Worcester, Ripon, etc., in Browne Willis and Britton to see the mad, stupid and utterly needless wholesale destruction that has been wrought. Again, in the old days the architecture

[1] See *Spring Gardens Sketch Book*, vii. 56, J.

of the church was subservient to the church's purpose. Where it is left untouched, it tells much about the church's purpose. Thus among a symmetrical row of windows there was often one unsymmetrical; often taller and broader; usually it has been restored, *i.e.*, made like the others. If it had been merely repaired, it would have suggested that in the aisle there was originally an altar, and a chapel round it, to

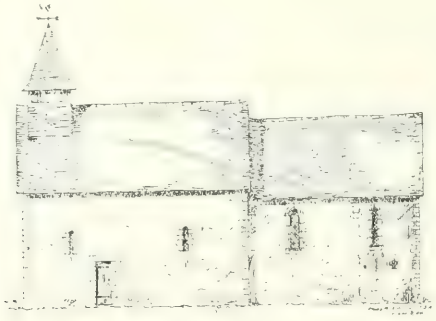


I. H. C. Malpas, Cheshire

light which a bigger window had been built: sometimes, perhaps, to perpetuate in heraldic glass the glories of the family which founded a chantry at this altar. There is very often a great deal of history behind a window. Croydon church has now big windows with rectilinear tracery; they are copies of those destroyed by the fire of 1867. But in pulling down the calcined walls it was found that there had been earlier windows than these lower down in the wall; and, lastly, that the

lower part of the wall was older even than these latter windows, and must therefore have had a set of windows of still earlier date.

At this point we may leave the strange history of the parish church. Looking at the little churches in our villages, who would have dreamt that they had a history so complicated and romantic? They are the very best of the many good old things left to us in this old country. They are all the more interesting, because, with the exception of a few scattered monographs, they are without literature. Their history, for the most part, lies hidden in the stones and mortar cemented into their structure. They have to be measured; a *big* plan, if accurate, often tells more than the church itself; and they have to be studied *in situ*. The masonry, the ground-courses of the walls, the string-courses, the bases of the piers—the very things that usually escape notice or are absolutely ignored—are to be studied with especial care. Some



Farley, Surrey

little knowledge of the local geology, at any rate of the building stones and quarries in use or disused, is valuable. The usual apparatus of details in the text-books will make it possible in most cases to date approximately the different parts of the church. But the work is not to stop there. It is not enough to date the different parts of nave, chancel, aisle, tower, transept. Dates are merely the dry bones out of which the attempt must be made to reconstruct the life history of the church. How is it to be done? There is but one method. We must work *a posteriori*; we must on no account commence with the assumption of an original church of such and such a plan. That is *a priori* reasoning and belongs properly to the department of imaginative literature. We must not begin at the beginning, but at the end. We must argue backward before we argue forward. First, we must examine with minutest care the church as now it is. Not a square yard of masonry is to be left without inspection; and everything is to be noted down; we are not to trust to memory. When all this is done, we may proceed to sort out our data. First, we

strip off all that was added at the last "restoration." This should be easy to do, if vicars and churchwardens were fined who failed to put in the church chest each year an exact record of every minutest thing done to the church in that year, all the history they had added, and all they had obliterated. Then we strip off all the work of Georgian and Jacobean times; then successively that of the fifteenth, fourteenth, thirteenth, and twelfth centuries. Not seldom we shall get down to bed rock in the twelfth century. But we may have the luck to plumb deeper; to prove, that is, the existence of an Anglo-Saxon church. Then copies of the big plan are to be made; inserting in the first only the work of the first building period in the church's history; in the second, in two colours, the work of the first and second building periods; in the third, in one colour, that of the first and second periods, in another colour, that of the third period, and so on. When finished, the charts may

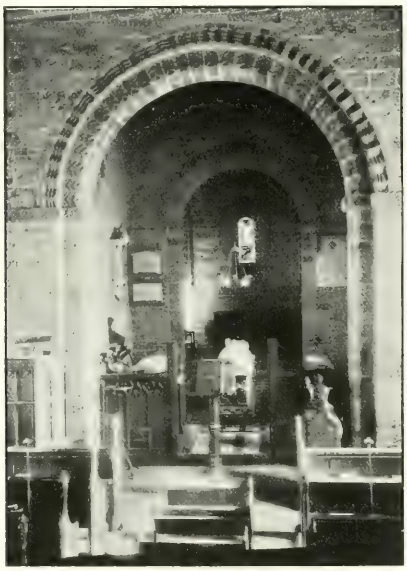
M. E. A. Ovingdean, Sussex

be spread out in chronological order; before us is the architectural material for a history of the growth of the church. We shall add, of course, if possible, documentary evidence. And, in particular, we must look up plans and views of the church before "restoration"; these ought to be collected and displayed on every vestry wall by the vicar and churchwardens. The smallest scrap of evidence is not to be neglected. The student must be a very "Sherlock Holmes." From a claw, a tooth, a vertebra, Sir Richard Owen reconstructed whole pterodactyls and ichthyosauri. It is for him who would understand an ancient parish church to reconstruct in similar patient fashion the tale of its long existence; going back from century to century, from generation to generation, till he see it as it rose fresh and new, it may be in Norman or pre-Conquest days. Dates are but the bones of the skeleton. The bones must be put together; the life history of the church must be reconstructed. We shall rise from the task with all the more respect and all the deeper love for the English parish churches, wherein are stored and shrined the piety and generosity and craftsmanship of long generations of humble villagers and

townsmen, for whom and by whom they were built, and by them bequeathed, a goodly heritage, to ourselves.

"No soulless pile is here of mere hewn-stone,
Such as in Egypt's deserts lonely stand,
Reared by sad captives from a conquered land,
Cursing their tyrants' gods, doubting their own.
This rose not to the sound of bitter groan
And the thong cracking in the driver's hand,
At some stern Pharaoh's arrogant command,
That royal dust might turn to dust alone.
Above their red-roofed homes, their busy mart,
The fruitful cornfield and the daisied sod,
Where they had loved and wrought, and played and wept,
Our sires, with joyous song and grateful heart,
Lifted this fair thank-offering to God;
Then with His blessing in its shadow slept."[1]

[1] *Sketches and Sonnets Illustrative of the Spire of St. James' Church, Louth:* by John J. Creswell, A.R.I.B.A., London, 1906.

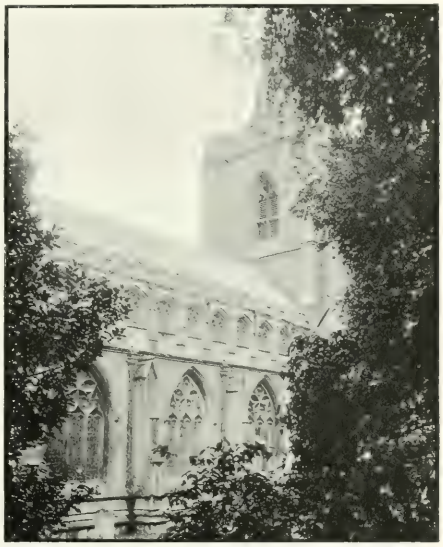


I. B. Moccas, Hereford

SECTION III

ANALYSIS OF THE GROWTH OF CHURCHES

So far we have spoken of the growth of the English parish church as conditioned in the main by the retention, so far as the requirements of ritual, the stability of the building, and the need of adequate light permitted, of older portions of the structure. It must not, however, be assumed that all our parish churches are of this heterogeneous character. There are, as has been shewn above, both early and late exceptions; *e.g.*, Barfreston, Kent (179), and Skelton, Yorkshire, retain their original plans; while where money and religious enthusiasm abounded *e.g.*, in Lincolnshire in the early fourteenth, in Norfolk and Suffolk in the late fourteenth and the fifteenth century, it was usual to raze to the ground the whole of the original church, to give room to a magnificent successor, such as Holbeach (237) and Lavenham (182); as a rule the interest of the great churches of Mid-Lincolnshire and East Anglia lies rather in their architectural design than in their archæological history. The happy hunting-ground for the archæologist is not a county like Norfolk, Suffolk, or Mid-Lincolnshire, which could afford to wholly rebuild, nor on the other hand a county like Surrey, Sussex, or Hants, where the parish often was unable to do any rebuilding at all; in such counties as these church after church will be reached in a day's ride in which no structural change in the fabric has taken place since the twelfth or thirteenth century. Where there was money, but not too much money, as in Northamptonshire, *c.* 1300, there the archæologist and the architect will obtain equal satisfaction, the former in the retention of so much old work, the latter in the excellence of the new.

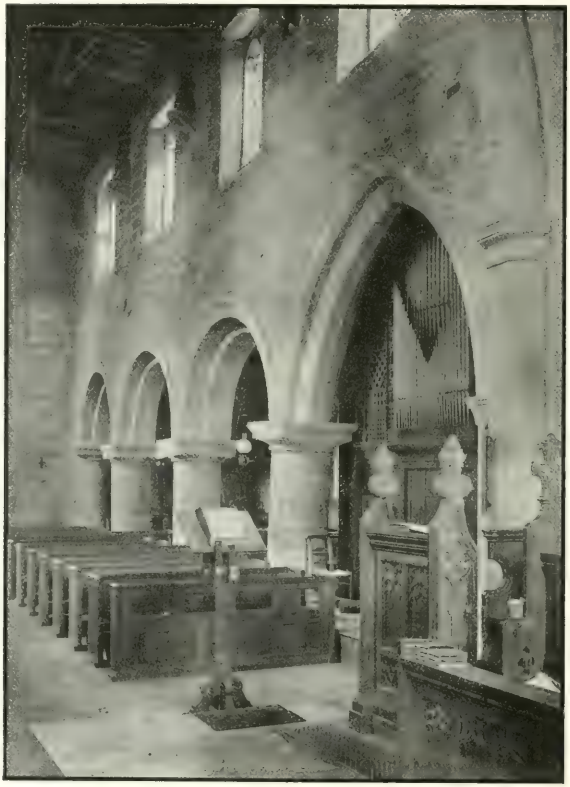


E. E. Holbeach, Lincolnshire

In some cases a very short inspection reveals something of the history of the church. At Walsoken, Norfolk (192), the ornamentation of the capitals and arches and the pointing of the chancel arch indicate that the church was built or rebuilt late in the twelfth century; and the fact that the present clerestory has rectilinear tracery in the windows shews that the original church had no clerestory, or if it had one, that it was low, like that of Whaplode (191).

At Longford, Derbyshire (238), the relation of pier-arcade and clerestory is similar to that of Walsoken. The capital of the pier in the foreground has been tampered with, and the

arch, which was originally semicircular like the rest, has been heightened and pointed ; at the same time, the capital has been altered to match the arch ; all this seems to have been done in the fourteenth century, the object of heightening the arch probably being to throw more light on the Rood. Again, the present tall and broad chancel arch cannot possibly be that



F. H. C. Longford from South-east

which was in existence contemporaneously with the Norman aisle ; that it really is late in date is evident from the moldings of the capital, which are those which were in vogue in the fourteenth century. It is contemporaneous with the easternmost arch of the pier-arcade.

At Calne, Wiltshire (239), we have at first sight a parallel to Longford : there is a late Norman pier-arcade and a late clerestory ; but the tall arch is one which was rebuilt taller and broader after the fall of the central tower.

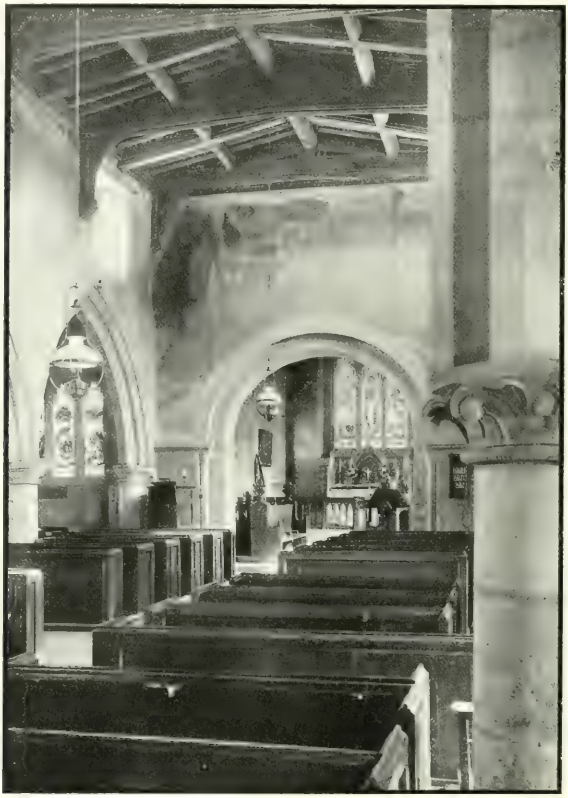
So again there is a good deal to be learnt from the illustration of Long Wittenham, Berkshire (240). The clerestory is of the sixteenth century, and the depressed tie-beam roof probably a century earlier; the north arcade appears to be of the fourteenth century; the south arcade is unmistakably of the thirteenth century, and the chancel arch of the twelfth. Now, starting with the last, we argue that there cannot have been a Norman chancel arch without a Norman or pre-Norman chancel and nave; we therefore assume that the original church had an unaisled nave and chancel of twelfth-century or earlier date. The first change in the Norman nave was to build a south aisle; the second to add a north aisle; the third to add a clerestory and re-roof; the fourth to enlarge the clerestory windows.

F. S. Calne, Wilts.

Iffley, Oxon. (241).—Here the latest part of the church is the eastern bay of the chancel, which, as is evident from the lancet windows and the stepped buttresses, is thirteenth-century work; the rest of the church (190) is just as plainly late in the preceding century. In that century the church was tripartite, with a fairly large nave, a choir under a central tower, and a short presbytery; it had and has no transepts or aisles. In the following century the presbytery was lengthened by one bay, as at Farley (234).

Castor, near Peterborough (204).—Originally there was here a cruciform Norman church without aisles; the western arch and the north-eastern pier of its central tower are shewn in the illustration; also the west wall of its south transept, with the remains of a Norman window which looked into the open air before a south aisle was added to the nave. This aisle was added in the thirteenth century; the arches of the pier-arcade and that inserted in the west

wall of the transept are semicircular, as is commonly the case with thirteenth-century work in Northants; with the capitals compare that at Hemington (540). When first built, this aisle was low; the weathering of its original roof remains above the blocked window. At a subsequent period the aisle was heightened.[1]



I. H. C. Long Wittenham, Berkshire

St. Michael's, St. Albans.—It has already been pointed out (p. 243), that to study the history of a parish church correctly, we must work backward. As a specimen of the method to be employed, we may take the south side of the nave of the little church of St. Michael's, near the old Roman city of Verulamium. If we start in modern times, eliminating as we proceed,

[1] See *Parish Churches in and round Peterborough*, by Rev. W. D. Sweeting. Peterborough, 1868.

the first thing to go will be the nineteenth-century gas standards. Then we take away the pulpit, which is of a design normal in the first half of the seventeenth century. Next goes the depressed tie-beam roof, which can hardly be earlier than the fifteenth century. Then we remove the windows, which are untraceried lancets, and, with the pointed arch and doorway below, are of the thirteenth century. Next take away the semicircular arch on the right, which, with its rude imposts, is not likely to be later than the twelfth century (the arch on the left has been altered at a later period, and we leave it out of account). We have now nothing left but the curious blocked arch half-way up the nave wall. What is it? Evidently it is the head of a side-window of the nave. What about the date of this window? If it had been built at the same time as the arch below, or later, it would probably be symmetrical with it; as it is placed unsymmetrically, we conclude that it was there before the arch: and

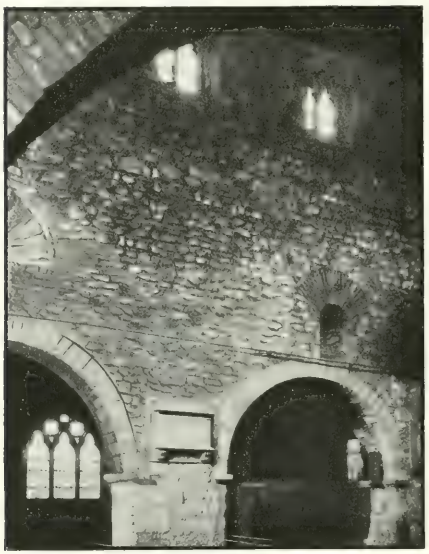
F. S. Iffley from South

that since the arch is Norman, the window must be pre-Norman, and the original nave had not an aisle.

Now we invert the process, and take the different features of the nave in chronological sequence. First, the nave wall is of Anglo-Saxon date, and originally had no aisle. Secondly, an aisle was added in the twelfth century. Thirdly, the Anglo-Saxon wall was raised in the thirteenth century to compensate by clerestory lighting for the loss of direct light caused by the blocking of the Anglo-Saxon windows; one of these clerestory windows, still in use, is seen on the right. Fourthly, at some later period the eastern part of the low, narrow Norman aisle was made broad and lofty; so lofty that the three eastern lancets which formerly looked out into the open air now looked into the aisle or chapel. Fifthly, there has been considerable alteration in roofs. The original Anglo-Saxon nave would be roofed much lower down than the present one. Then, when a clerestory was

added, a roof of thirteenth-century type would be put up over it. For this the present roof was substituted, probably in the fifteenth century. Sixthly comes the pulpit; and seventhly the gas standards.

Leicester, St. Nicholas (242).—In this most interesting church what strikes one first in examining the north side of the nave is the extraordinary disproportion between the height of the nave wall and that of the arcade below: they cannot possibly be of the same date; the original nave must have been very low, and its walls must have been raised for the insertion of a clerestory somewhere about the fifteenth century. Then there are blocked windows, as at St. Michael's, St. Albans, and Manorbier (199), and they are not arranged symmetrically with the arcade below. If the piers and arches had been built first, the windows would have been placed either over the centre of each pier or over the apex of each arch; as they are not, the conclusion is that the windows were there before the arcade, and that they lighted an unaisled nave. And as the present arcade is late in the eleventh or early in the twelfth century, the nave walls are probably those of an Anglo-Saxon church. First, then, we may assume an Anglo-Saxon nave without aisles. Second, a low, narrow Norman aisle was added. Thirdly, at some later period the aisle was widened. Fourthly, the nave being now badly lighted, its walls were raised and clerestory windows were inserted. At a still later period one vast arch, seen in the foreground of the photograph, was substituted for low arches such as those still remaining on the north side of the nave. The church must have originally possessed a small Anglo-Saxon chancel, and round this seems to have been built, as at Chipstead, Surrey, a central tower with transepts and a vaulted presbytery to the east.



J. B. Leicester: St. Nicholas

Shere Church, Surrey (247).—In the "Happy Valley" between Dorking and Guildford, by the side of a bubbling trout-stream, beneath immemorial elms, lies the picturesque village church of Shere. We will imagine that we have made the tour of the church, first the exterior, then the interior; that we have got together a heap of material in the way of chronological data; and that we have sorted it and arranged it in centuries. Beginning at the end, *i.e.*, the nineteenth century, we have on the south side of the nave two debased lancet windows, A, A; and on the north side modern vestries (not shewn in our plan); there is also a window, C, near the wall plate of the north wall of the nave replacing one which was probably inserted to throw light on the Rood or else on a Rood tympanum.[1] To the eighteenth century belongs a hideous south window, D; and a fine western gallery, which has actually preserved its external stair-

[1] See the writer's *Screens and Galleries*, 125, on "Tympanic Screens."

F. B. St. Michael's, St. Albans, from North-west

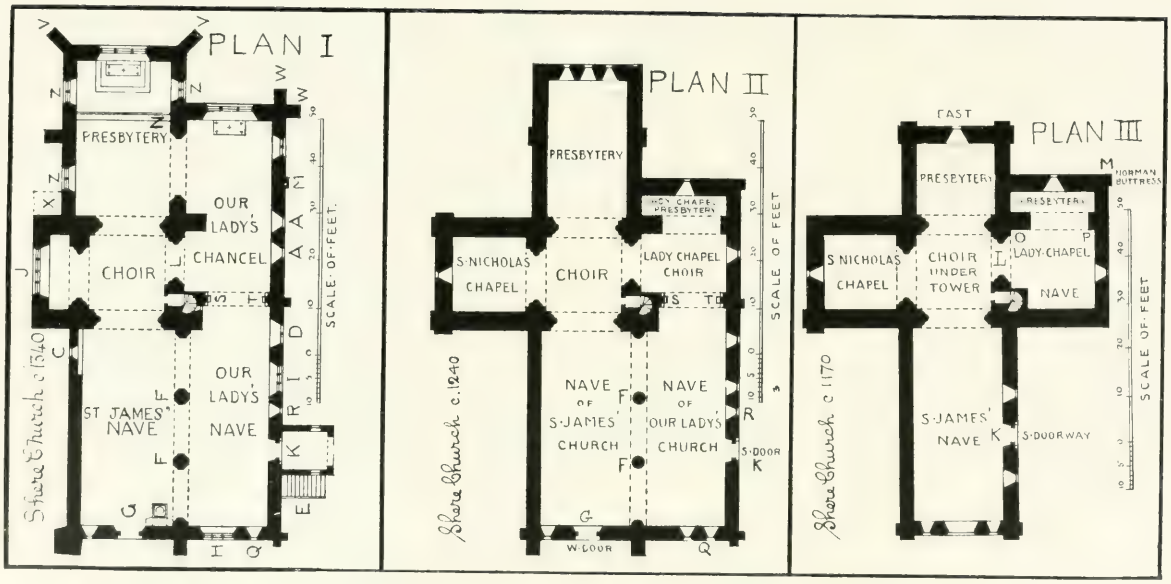
case, E, by the side of the south porch. To this century also we may probably attribute the casing up or rebuilding of the piers, F, F, in brick and plaster, shewn in the photograph. To the seventeenth century belongs a fine western door, G, with the date 1626 on it. In the fifteenth century lancets were replaced by windows with rectilinear tracery, H, I.[1] To the fourteenth century belongs the prolongation eastward of the south nave and the remodelling of the present chancel; also perhaps the underpinning of the tower, and the shortening of the north transept, J. To the thirteenth century belongs the south nave and the jambs of the south doorway, K; the upper stage of the tower, possibly the oak spire; the west doorway, G,

Shere, Surrey

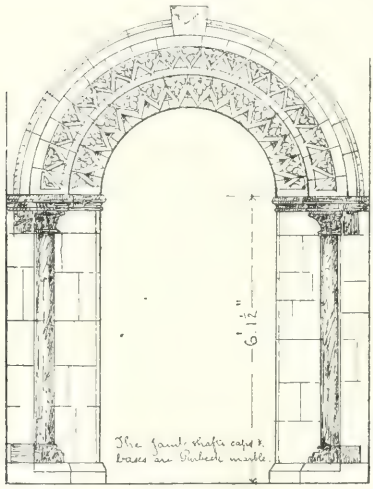
of the north nave, and probably an earlier chancel. The rest of the church was built in the second half of the twelfth century (Plan I.).

Now let us try to reconstitute church No. 1. Of this there are visible the two lower stages of the central tower; on the south side of which there is a double Norman window; there remains the southern arch of the tower, L; there is the arch of a Norman doorway at K; there is a pilaster buttress at M; it is seen to the right of two lancet windows on the left of the photograph (248); and the fact that the portion of wall remaining on the south side of the chancel at N is thicker than that on the north side makes it probable that it formed part of the

[1] There is a large window, I, in the centre of the south wall of the nave of the Lady chapel, below which there must formerly have been an altar. For on a brass is the inscription, "Pray for the soullis of Olever Sandes and Ione his wife, ye which made *this wyndow and this auter*, which Olev' dyed ye VII. day of November, ye yer of Our Lord MVXII., on whos soll Jhesus have mercy."

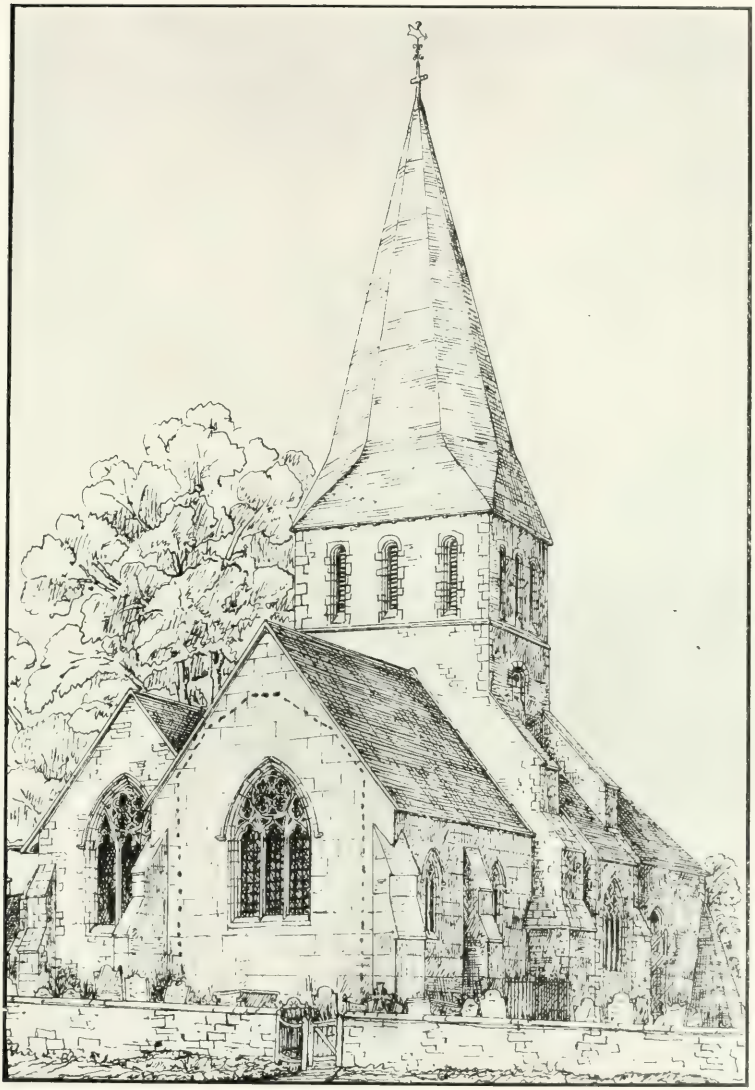

PLAN I
PRESBYTERY
OUR LADY'S CHANCEL
CHOIR
OUR LADY'S NAVE
ST JAMES' NAVE
NAVE
SCALE OF FEET
Shere Church c 1340
PLAN II
PRESBYTERY
S NICHOLAS CHAPEL
CHOIR
LADY CHAPEL CHOIR
NAVE OF S JAMES' CHURCH
NAVE OF OUR LADY'S CHURCH
S DOOR
W DOOR
SCALE OF FEET
Shere Church c 1240
PLAN III
EAST
PRESBYTERY
NORMAN BUTTRESS
S NICHOLAS CHAPEL
CHOIR UNDER TOWER
LADY CHAPEL
NAVE
S JAMES' NAVE
S DOORWAY
SCALE OF FEET
Shere Church c 1170

Norman chancel wall; the thickness of the side walls of the truncated north transept argues that they also are Norman. Putting these data together, it is evident that the Norman church had north and south transepts and a presbytery: as the choir would be under the central tower, the presbytery would be short; we have drawn it with one square bay. There would of course be a nave; we have drawn it with two bays; probably the existing north wall is that of the Norman nave. So we get a normal cruciform church with a nave of two bays, and with choir, transepts, and presbytery, each of one bay. But there is one thing that we have not taken into account; that is the Norman buttress at M. One would have expected this buttress to be in a line with the south-east pier of the central tower; but it is not; it is some feet further east. This means and can only mean that the Norman north transept extended some feet east of the crossing. If so, that transept must have had an eastern aisle. To abut the central tower there must have been a wall running south from O to P; and this wall would be pierced with an arch leading into a narrow eastern aisle. It may seem incredible that a little village church at this period should luxuriate in an eastern aisle as if it were some Durham or Winchester cathedral; but as a matter of fact in the village church of Sompting, Sussex, there is still existing a very early transept with an eastern aisle. That may well have been the case at Shere also. What did they want with an eastern aisle? Various wills point to there having been in later days an altar to Our Lady in this part of the church. We may conjecture then that the south transept and its aisle were a Norman Lady chapel; the latter serving as chancel and the former as nave. And as we know that there was also an altar of St. Nicholas in the church, we assume that the north transept formed his chapel (Plan III.).



L. W. R. Shere

Now we turn to church No. 2. There now came a very important period in the history of the church. (1) The tower was heightened. (2) A new western doorway, G, was inserted in the nave, something like that at Hedon (708), but of course not so large. (3) A new south nave was built: it was of the same area as at present, for there remain lancet windows both in the south and the west wall at Q and R; and there is a beautiful arch, ST, with Purbeck marble shafts, opening east from it into the old transept; it is shewn on p. 244. Moreover, the south doorway, K, has Purbeck marble shafts, though its arch has been taken from the ancient Norman south wall and reset (246). As for the piers, F, F, between the two naves, they may well have had detached shafts of marble, and proving too weak, were cased up in the eighteenth century; it is quite possible that the original piers and capitals still exist beneath the coating of bricks and plaster. This great western extension of the Lady chapel has already been commented on in p. 202. (4) The present chancel is fourteenth-century work. But in the masonry of its east wall may be seen traces of a narrower and lower chancel (247). It is not likely that the eastern bay of the chancel existed

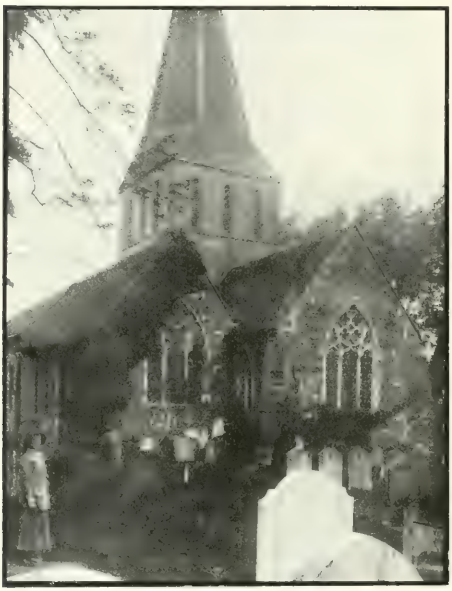


L. W. R.

Shere from North-east

in the Norman church; most likely the Norman chancel had but one bay, and the additional bay was added, as at Iffley (241), in the thirteenth century (Plan II.).

Now we come to church No. 3. Even after the addition of a western nave, the Lady chapel was not grand enough; so the little eastern aisle of the south transept and also the wall and arch, OP, were demolished, and the transept was extended considerably to the east. It now altogether ceased to exist *qua* transept, the whole of the part of church east of the thirteenth-century arch, ST, becoming a chancel, divided no doubt into choir and presbytery, and with the altar of Our Lady in the latter. It was not prolonged quite so far east as was St. James' presbytery, because it would have blocked the south window of the latter. Then the thirteenth-century chancel of St. James' church was taken in hand. If the plan of the present church (245) be examined, it will be found that the present north wall of that chancel is not in a line with the north wall of St. James' nave. Evidently the chancel was widened at this time to the north. Some little time elapsed between these two extensions. For the east window of the Lady chapel has late geometrical tracery, *c.* 1300, as is seen in the photograph (248); whereas that of the other chancel, though very similar to it, contains an ogee arch, *c.* 1320; to the same period belong the windows, Z, Z, with reticulated tracery. Moreover the buttresses, V, V, are set diagonally; whereas the buttresses, W, W, are at right angles. Still more advanced is the tracery of the end window J of the truncated north transept, *c.* 1340. It may have been at this period that the arches of the tower were underpinned, and the north transept shortened in consequence of some weakness. After this no alteration of the ground plan has taken place till recently, except the demolition of the little anchorage, X, which formerly stood[1] at the corner between the north transept and the chancel; on the inner side of the wall there remain a quatrefoiled opening[2] through which the anchoress could communicate, and a squint through which she had a view of the celebrant at Mass[3] (Plan I.).



F. F. Shere from South-east

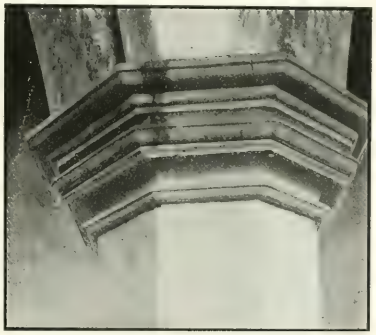
Westhall, Suffolk (253).—To this sequestered village church we will apply a similar mode of

[1] There is documentary evidence to the effect that Christine, daughter of William Carpenter, early in the fourteenth century had licence to dwell in Shere churchyard as an anchoress.

[2] Illustrated in a paper by Mr Philip M. Johnston in the *Surrey Archæological Collections.*

[3] On Shere church see the illustrated paper by Rev. Dr Cox in the *Builder,* 14th April 1906; and the *Victoria County History of Surrey*; also the measured drawings of Mr Lacy W. Ridge in the *Architectural Association Sketch Book* for 1817.

analysis to that which was employed in St. Michael's, St. Albans. We examine it first from outside (Plan I.). The church is approached from the south-west. Before us is a small tower about twelve feet square internally, A, placed unsymmetrically; evidently an afterthought. The presence of two trefoiled windows betokens that its two lower stages are thirteenth-century work; its upper stage seems to have been added in the seventeenth century: it is entered from the church at B. Entering the tower, we have a delightful surprise. It has preserved a charming Norman façade (251), whose doorway is enriched with characteristic Norman ornament; cable, round billet, catheads, tori and clematis; in the jambs are shafts distorted like those at Climping (706). Above is arcading, retaining the central window with jamb-shafts; the work is late in the twelfth century. Passing outside, we find at C another Norman doorway, evidently of the same date as the western one (251). To the east are two lofty windows of three lights, D, D, with graduated battlemented transoms; these are fifteenth-century work; further east in the wall are traces of a third similar window, D. Close to the west of one of these windows, shewn in the photograph (251.3), is a blocked Norman window, E. Passing round the corner to F, we find an east window with the same kind of transoms as D, D, and no doubt of the same date (251.2). But what is most remarkable, there are plainly seen in this east wall traces of an arch. And on stepping back, there are seen (even in the photograph) traces left by two walls and a gable above them. Moreover, in the long grass (not visible in the photograph) are two eastern spurs or foundations, shewn at F on Plan I. What does all this mean? We have been seeing the west doorway and south doorway and a blocked window of a Norman nave; what we have now hit upon are traces of a lost Norman chancel, and the five-light window must have replaced a Norman chancel arch. Now, turning to the south side of the present chancel, we see at G a window of three lights with reticulated tracery, and a buttress, H, of three stages; there are other similar windows and buttresses on both sides of the chancel which are work of the second quarter of the fourteenth century (251.2). Passing on to the east end of the chancel at I, we have a window of five lights, also with the same reticulated fourteenth-century tracery; an internal view of it is given (250). Passing round to the north side of the north nave, we see at J, J two thirteenth-century buttresses, and between them a fifteenth-century or late fourteenth-century window of three lights, K. Then comes a porch, M, which seems to be early in the sixteenth century; and in the wall between J and M is a blocked lancet window, L, of the thirteenth century; part of this window is seen in the photograph (251.4). Then, entering the church, and standing in the south nave with our backs to F, we see on the left, first the windows, D, D, and then the doorway, C; in front, at B, is the west doorway with the little Norman window above it, the other side of which we saw from inside the tower (252). Then, passing to P, above our heads is the chancel arch, and to the west of us is the north nave (250). On the right is the window, K, and the doorway leading into the church from the porch, M (251.4). Then turning round and looking east, we have the present chancel before us, and its big reticulated



Westhall: Pier-Arcade

window, 1 (250). Then, returning to the south nave, we see that it is separated from the north nave by five arches supported by piers whose molded capitals are of the character of those of Wittersham and Beverley St. Mary (544); these were in vogue *c.* 1330; one of them is illustrated on p. 249. This pier-arcade is seen on the right-hand side of the south nave (252). The puzzle is that though the walls of the north nave are of the thirteenth century, the pier-arcade is not of the thirteenth, but of the fourteenth century.

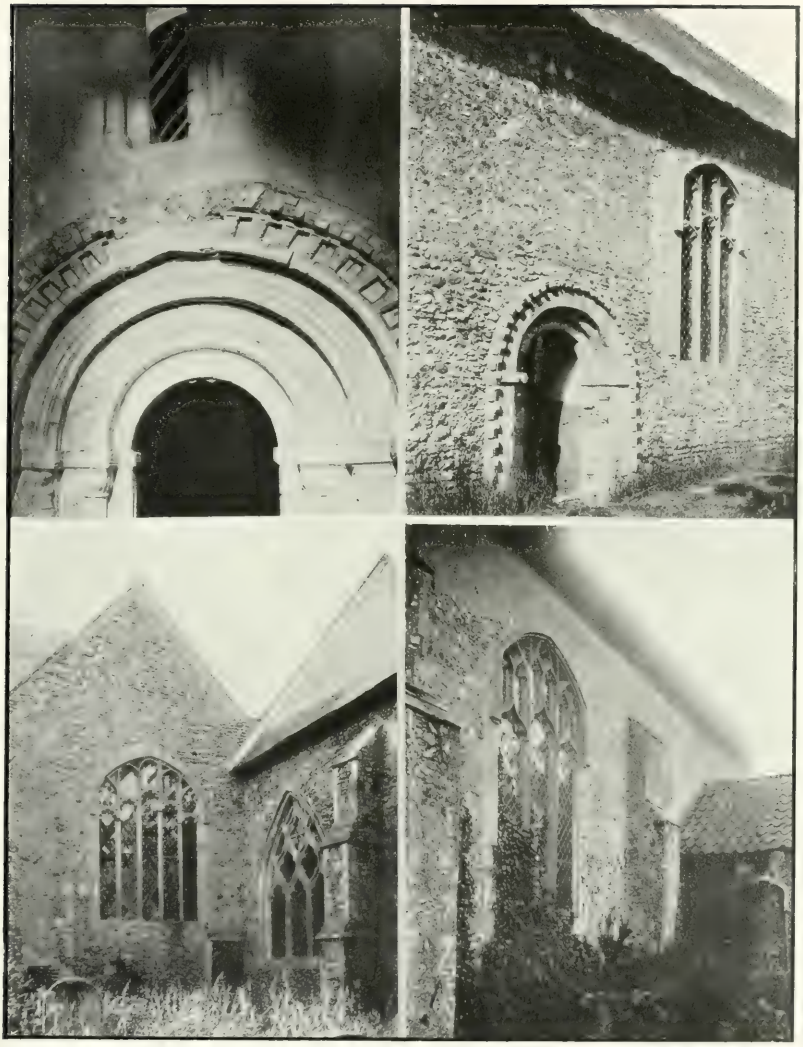
At this point the investigator usually stops; he has dated approximately the different parts of the church; he goes home to dinner. But he ought not to be in such a hurry. All he has done so far is to get together a confused heap of material. He ought to

F. B. Westhall, Suffolk

North Nave Chancel

stay and sort it, arranging it in chronological sequence; when that has been done, he may attempt to read the history of the church backward. This we will essay to do. First, take away the upper part of the tower, seventeenth-century work. Second, take away the porch, sixteenth-century. Third, remove all the late fourteenth and fifteenth century windows. Fourth, remove the early fourteenth-century work; this comprises the whole of the present chancel as well as the pier-arcade between the two naves. Fifth, take away the thirteenth-century work; this comprises the walls and buttresses of the north nave and the lower portions of the tower. Sixth—but we have nothing left but the south nave and some foundations to the east of it which are twelfth-century work; we can carry the analysis no further.

That being so, the converse process may now be entered on; we have taken the



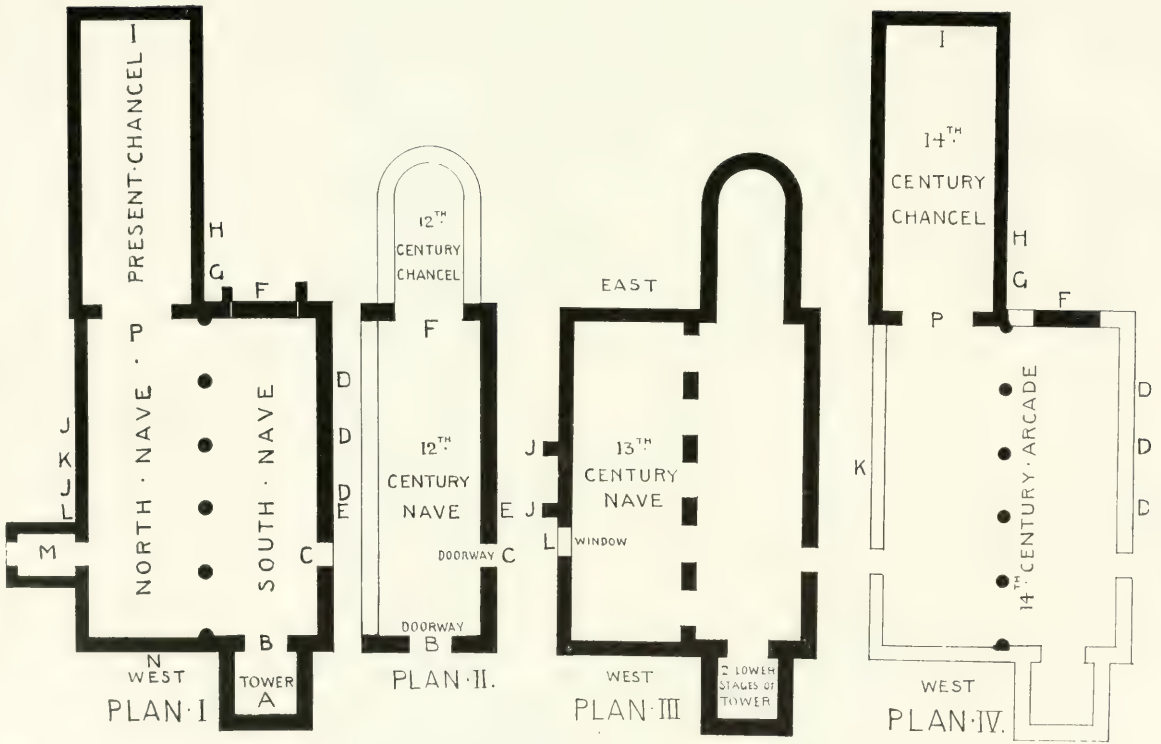
Westhall

1. West Doorway
2. South Nave and Chancel
3. South Nave
4. North Nave

church to pieces; now let us try to put it together again. We start with the earliest work—that of the twelfth century: of this we have a west wall and doorway, B, a side wall and south doorway, C, and blocked window, E, parts of an east wall, and traces of a chancel arch and a chancel, F. Putting these together, we shall not be far wrong if we conclude that church No. 1 consisted merely of an aisleless nave and an aisleless chancel (Plan II.). How the chancel ended to the east, whether square or semicircular, we cannot tell; we will assume that it was apsidal, like Heckingham (180). Then we turn to church No. 2 (Plan III.). In the thirteenth century a new nave was added to the north; to this belong the buttresses, J, J,[1] and the blocked window, L; and there must have then been built a thirteenth-century pier-arcade between the two naves; now, however, there are no signs of it. In the same period the western tower was commenced. Next comes the third church (Plan IV.). In the fourteenth century the north nave was provided with a chancel of its own. But if the Norman apsidal chancel had been allowed to remain, it would have blocked the two south windows of the new chancel; it is probable, therefore, that it was at this period that it was demolished. Then the thirteenth-century pier-arcade was pulled down. But why? We can only suggest that it may have been built only in the rude manner seen at St. Nicholas, Leicester (242), and Ickham (197), consisting merely of big openings hewn out of the wall, leaving large obstructive blocks of masonry between. Such an arcade would clamour to be replaced by something lighter and less rude. Then we come to the fifteenth century. At this period one great object of the parishioners was to improve the lighting of the old and new naves; the chancel was already well lighted with the reticulated windows; one of the new windows, K, of the north nave is shewn in the photograph (251.4). The greatest change was in the old Norman nave; the new windows, D, D, F, are lofty and well proportioned. To get in these tall windows, the walls of the old and new naves would have to be heightened, and for this purpose the old roofs would have to be taken off; they were not replaced. Instead of these, roofs of a new type—arch-braced—of great beauty were put up; notice the cornice of the roof of the south nave (252). The seven-sided rafter roof of the chancel was not interfered with; it had only been put up in the preceding century, and would be in good repair (250). It will be noticed that the roof and the windows of the south nave are more elaborate than that of the north one. Why is that? The probability is that here, as at Shere, the cult of Our Lady had grown in favour, and that it was desired to give Her what was practically an independent church, which should rival and in some respects surpass the main church, which is dedicated to St. Andrew. It is possible, too, that in

F. F. Westhall: South Nave

[1] The fact that these buttresses do not line with the existing piers argues that they were built at an earlier period than the latter.



Westhall not to scale

this southern church some rich parishioner was allowed to found a chantry, and that in return for this concession, he was asked to heighten its walls, to put up a new roof, and to insert the fine eastern and southern windows, filled no doubt with the good stained glass of the period, in which the village churches of Norfolk and Suffolk abounded in the later days. The story ends with the addition of the porch in the sixteenth century and the heightening of the tower in the seventeenth. Such is an attempt to elicit from the stones and mortar the story of the growth of Westhall church: like all such attempts it is inevitably but conjectural; in an architectural record, as in the geological record, there are always gaps; fuller knowledge might impair or even wholly vitiate the conclusions that have been suggested above.

Dorchester Abbey Church, Oxon.—This church is one of great interest; partly from the remarkable beauty of its details, partly from its ancient associations. In 634 A.D. it was the cathedral church of Birinus; the seat of the first see of the West Saxons, including the present dioceses of Winchester, Salisbury, Exeter, Bath and Wells, Lichfield, Worcester, Hereford. Later it was the cathedral of the great diocese of Lincoln, including the ten counties of Lincoln, Rutland, Northampton, Cambridge, Hertford, Huntingdon, Bedford, Buckingham, Oxford and Leicester; till the first Norman bishop, Remigius, built a new cathedral in Lincoln, removing there in 1092. From the earliest times it had been served by Secular Canons, but in 1140 it was handed over to Austin Canons, who remained in possession till the Suppression.

Let us go round the church, which internally is 186 ft. long. At the west is a tower, ABCD, which does not line with the nave, and is an afterthought; it was built in the time of Charles II. Walking east from C we skirt a long wall, of which the lower portions at any rate are Norman work; a Norman string runs along it (255); there are traces also of the south walk of a cloister. The photograph shews an early untraceried window on the right, and on the left one of two large square-headed windows inserted in the first half of the fourteenth century. Returning to the plan, at I is a blocked Gothic doorway; at J is another small doorway; both the doorways formerly led from the church into the cloister, I probably being used at some later period instead of J. The capitals of the doorway,[1] J, are just at the turning point between the Corinthianesque foliage of Romanesque and the conventional leafage of Early Gothic; we may date the doorway approximately at 1170. Then comes another bit of wall from J to K; and then a long wall from K to P; of this the western part is modern; further on are the windows, buttresses and doorway, O, illustrated (255); these appear to be *c.* 1280. Then from Q round to T are three wonderful windows (680, 260), not earlier than 1340. Between T and U are two windows, one of which has Kentish tracery; from U to BB is a series of windows with intersecting mullions and cinquefoiled lower lights, a sign of late date: the photograph shews four tall windows and one short (256). At 7 and 11 are blocked arches low in the wall, through which the builders removed scaffolding and material when they completed these portions of the church; 11 is seen in the photograph, near the ivy (256). Under the stove-pipe, as the photograph shews, the masonry beneath the window at X is rude, and differs from that to the east and west; also a wall is seen breaking through the roof. At 12, close to the ground, is an opening for shovelling in bones. To the west is a fifteenth-century porch, AA (258). Now we pass inside from the porch, and find that the nave has an aisle on the south side only. At the east end of this aisle (259) is a blank wall; pierced with a small doorway to the left; once it had a central reredos. The altar is raised on a series of platforms

[1] This doorway is illustrated in Rickman's *Gothic Architecture*, 98.

to give headway to a charnel house below. The three arches on the left appear to be of the middle of the fourteenth century. At each end of this pier-arcade the plan shews a deep respond, 14, 15; if we joined up the two responds, we should have a south wall corresponding to the existing north wall of the nave. The photograph shews that the eastern respond has on its inner face the same Norman string-course as the north wall of the nave opposite (260). In the nave, looking east, we see above our heads a Norman chancel arch, EF, which, however, is pointed; the capitals also are transitional in character; this arch, therefore, like the doorway at J, we date at *c.* 1170 (260). Next we enter the chancel; this has a narrow aisle to the north and a broad aisle to the south. At EG and HF are two rude semicircular arches;

F. H. C. Dorchester from North-east

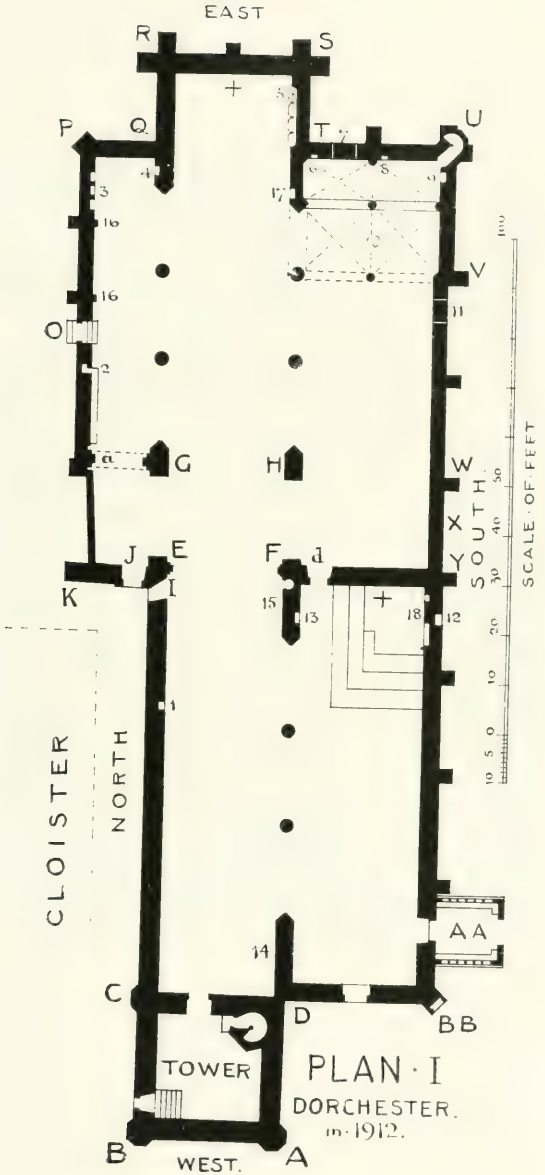
both are shewn in the photograph; they have been said to be eleventh-century work: if so, they would be north and south arches leading into a transept of the early church of the Secular Canons. But they may have been enlarged to their present form in post-Reformation times. Or they may have been cut back in the fourteenth century, with the intention, not carried out, of inserting in each a pointed arch corresponding to those seen further east in the photograph. Not being able to settle the matter, we must leave them out of account. At K*a* and *a*O there is much disturbed and modern masonry. At *a* there has been opened up in the thickness of the wall a pier and capital, the latter with the conventional stalky foliage of *c.* 1220, similar in character to that illustrated (265); this pier must originally have had an arch to the north of it. Both aisles have an arcade of three pointed arches resting on piers of

the latter years of the thirteenth or the early years of the following century, differing slightly in design (260). The arcade of the narrow aisle on the left is of the same date as the windows and buttresses and doorway of the north aisle; *i.e.*, *c.* 1280. Turning to the broad aisle, it will be seen that it falls into two parts, the eastern of which, TUV, is vaulted; the vault is modern, but replaces vaulting which formerly existed. The western bays are rather narrower and are unvaulted. The vaulting of the eastern bays was probably arranged for two altars to the east and for a shrine at 10 of some relics of St. Birinus, who, though buried in Winchester cathedral, was, as we have seen, closely associated with Dorchester. Then we

F. H. C. Dorchester from South-west

enter the east bay of the presbytery, which, with its exquisite piscina and sedilia (263) and magnificent windows, is one of the most superb examples we possess of the rich work that was being done up to the advent of the Black Death in 1359. On the north is the famous Jesse Window (255); the east window has a central buttress, like the east window of Gloucester cathedral and the west window of Leominster church; among the subjects represented in the Dorchester window are the Resurrection and the Harrowing of Hell[1] (262, 261).

[1] In this last, Hell is represented as usual by the gaping jaws of a beast. "Balene," whales, are mentioned in the Bestiaries, their spouting being described; but the conventional representation of Hell is not as a whale, but as a beast. The carving appears to be early work of the thirteenth century, whereas


EAST
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SOUTH
SCALE OF FEET
O
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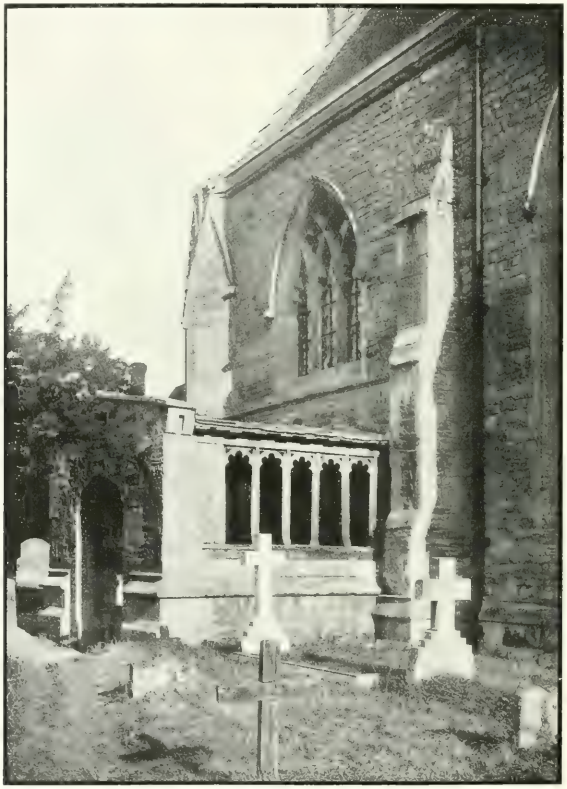
d
K
I
CLOISTER
NORTH
AA
C
D
BB
TOWER
PLAN · I
DORCHESTER.
in 1912.
B
WEST.
A

The next thing is to collect and sort the chronological data we have obtained above, and to eliminate successively the work of each building period till we reach church No. 1. First, we eliminate the seventeenth-century western tower; the next to go is the fifteenth-century porch, AA (258). It follows that the church is in the main a work of the fourteenth

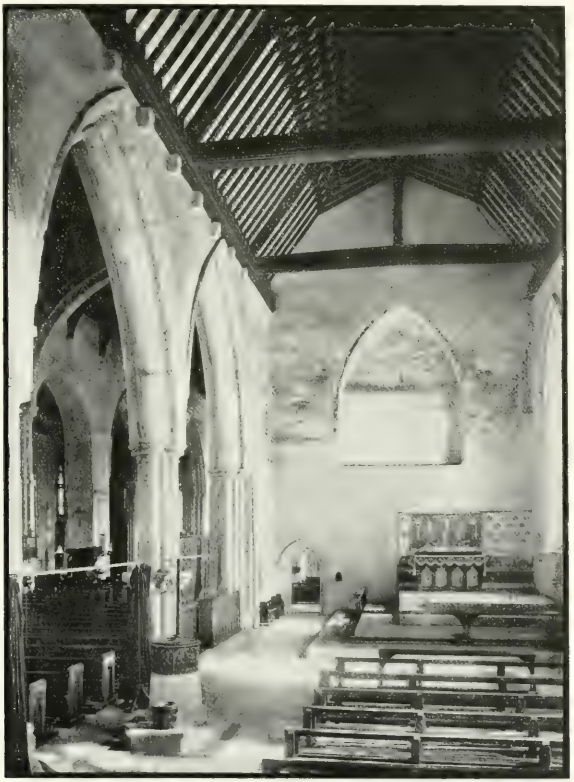


I. H. C. Dorchester, Oxon.

and preceding centuries. Thirdly, we have, *c.* 1340, the short sanctuary with its piscina and sedilia, QRST. Fourth comes what was evidently the parochial nave, F, BB, *c.* 1340. Fifth

the adjacent window and glass are early fourteenth-century work. The treatment is in accordance with the gospel of Nicodemus, *cc.* xvii. 13 and xix. 12; Our Lord takes Adam by the hand, followed by the company of saints, and takes them with Him to His glory. The right hand is gone, but once held a cross staff, the line of which can be made out on Christ's robe.—G. C. D.

is the south aisle, really the south chapels, of the chancel, with a piscina at 9, *c.* 1300 (266). Sixth is the north aisle or chapels of the chancel which *appears* to be *c.* 1280. Seventhly, we have some work done, probably *c.* 1224, when there was a translation of certain relics of Birinus. To this period belongs the arch, G *a*, whose foliated capital at G is illustrated (265);



H. H. C. Dorchester Abbey: South Aisle of Nave

also the pier and capital at A in the thickness of the wall. But what is very puzzling there are vaulting shafts in the north aisle with foliated capitals, 16, 16, of the same character as those at *a* and G. Eighthly, there is a good deal of Norman work, to which we have attributed the date *c.* 1170.

Out of this last we now proceed to construct Plan II. This shews the north wall and two pieces of the south wall of a nave, viz., two responds at 14, 15; the photograph (260)

shews the latter as well as G and H, with the same Norman string as the north wall of the nave; the plan also shews two more responds at 4 and 17, which are apparently the eastern terminations of the side walls of a long chancel. The rude masonry we saw (256) between W and Y is probably the lower part of the end wall of a south transept; if so, FY is its west

F. H. C. Dorchester from West

wall. At FE is the tall pointed chancel arch seen in the photograph (260). On the other side of the church, in a line with FY, is another bit of wall, EK, with a Norman doorway, J; this will be part of the west wall, EL, of a north transept. The next thing is to restore from conjecture the missing portions of the Norman church. We join up by dotted lines the south wall of the nave, and all three walls of the chancel. If WY and YF are walls of a transept, it must have had also an east wall, WH. And since a great church of Austin Canons would

be likely to have symmetrical transepts, and since we have remaining some of the west wall of a north transept, EK, we complete this transept after the plan of the south transept. Then EFHG will be the crossing, which at one time must have had an eastern arch, GH, and probably a central tower. Thus we get a cruciform church, of considerable size, but still only of

L. H. C. Dorchester: East Window

the second scale: just such a church is Finchale, as now reduced; Dorchester had probably the same disposition of choir and presbytery as Finchale (141).

Now we come to church No. 2. We make a copy of Plan II., and insert in Plan III. the pier and capital, *a*, and the vaulting shafts, 16, 16. The presence of *a* implies an arch on either side of it, and one arch, *a* G, which still survives and whose capital, G, is illustrated

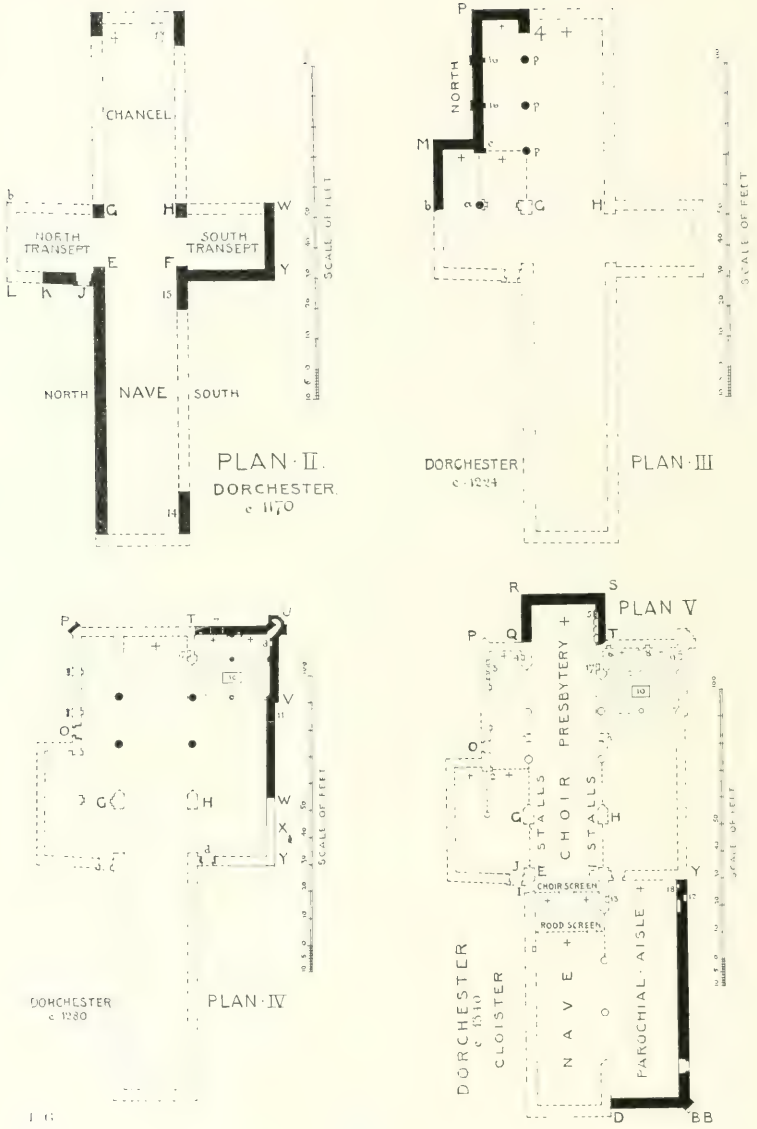
1265, must have opened into an aisle, and the other arch into an eastern chapel; the foundations of this chapel have actually been found. So we substitute two arches for the east wall, G *b*, of the Norman transept, and from M build new walls, M *b*, M *c*. Now we turn to the vaulting shafts, 16, 16. They are *in situ*, and prove conclusively that the wall, *c* P, is

F. H. C. Dorchester: East Window

not of the date *c.* 1280, as its windows, buttresses and doorway, would lead us to suppose, but is *c.* 1224, and must originally have had lancet windows. Opposite each vaulting shaft there must, of course, have been a pier; we therefore remove the Norman wall, G4, and substitute piers at *p*, *p*, *p*. This gives us three piers and four arches. But the plan (257) and the photograph (260) shew that at present there are only two piers and three arches. The latter arches are broad and lofty; but the vaulting shafts are so near together and so low that

the original arches must have been narrow and low, and four in number. Judging from the evidence of stone and mortar only, we infer that the pier-arcade with four low, narrow arches, and the vault and the lancet windows, only survived till *c.* 1280, when one would expect all the work would still be perfectly sound. What happened *c.* 1280? Well, the central tower, if any, may have collapsed through the failure of its eastern arch; but there is no trace on the two eastern piers, G and H, of any such collapse. It is more likely that the Canons received such a considerable addition of wealth as enabled them wholly to remodel this part of the church. The remodelling was on a large scale, and went on, with four short breaks, for some seventy years, *i.e.*, up to *c.* 1350 or perhaps a little later. This suggestion is supported by historical facts. But three miles away is the town of Wallingford, with a castle commanding the Thames. Now this castle was of very great importance; and in the time of Edward I. (1272-1307) was reckoned one of the royal palaces, and the governor of Wallingford castle was a sort of viceroy and usually of royal blood. In the time of Edward I. the Earl of Cornwall was governor of Wallingford and lord of many manors near Dorchester. It is likely then that he would be interested in the most important religious house in his district, and might well desire to found and endow a chantry within its walls, where on his death masses should be said for the repose of his soul. Whether he built himself a chantry chapel or not, he certainly contributed largely to the new works; for his arms occur no less than five times in the windows. There can be little doubt that the addition of chapels on the south of the chancel, the remodelling of the work to the north, and the addition of the present presbytery were largely due to the munificence of the Earl of Cornwall and other governors of Wallingford: perhaps an effigy in ring-mail, *c.* 1270, represents one of them. And a striking proof that much of the work was done in the last years of the thirteenth and the first part of the fourteenth century is seen in the fact that of forty shields of arms in the church which have been engraved by Mr Addington, all are of persons living within twenty years of 1300; *e.g.*, Edward I., Queen Eleanor, the Earls of Lancaster and Arundel. What motived these expensive changes? There were probably two motives. It is likely that the work of 1224 was undertaken to provide a mausoleum for the shrine of St. Birinus, which

F. H. C. Dorchester. Sedilia and Piscina



Dorchester Abbey

would probably be placed in the new north aisle, vaulted in his honour; so placed it would occupy the most highly esteemed position in a mediæval church; for to those of the Old Religion, Christ was ever present at the altar, facing His people; and a position at His right hand, *i.e.*, to the north of the altar, was the most honourable in a church.[1] We conceive, therefore, that the shrine of St. Birinus at first stood north of the High altar, which, of course, was situated further to the west than at present. Such was the original position also of the shrine of St. Hugh at Lincoln in the north-eastern of the radiating chapels (53). But at Lincoln it was found, no doubt, that this position was a very awkward one for a concourse of pilgrims who wished to pass round the shrine, and so the shrine was moved elsewhere, the so-called "Angel Choir" being built to receive it. Something of the kind may have occurred at Dorchester. It may have been resolved to remove the shrine of Birinus to the

E. H. C. Dorchester, Oxon.

south of the chancel, and there to build a chapel twice as wide as that on the south side, so that there should be room for pilgrims to pass round the shrine on all sides: we have indicated its probable position in Plan IV. at 10. And to shew how holy was the spot, this part of the church was to be vaulted. And the Norman wall south of the presbytery was to be cut into by a broad and tall arch, to be followed later on by similar arches to the west. But if this design were carried out, the chancel would look very lopsided, with three tall and broad arches on the south, and four narrow and low arches on the north side. As we have seen, there was plenty of money to be had, so the piers and arches on the north side were removed, and the vault also was taken down; quite conceivably it was reused in the four bays of the new Feretory on the south. Then, on the north side, the present two piers and three lofty arches were put up; a capital of the spring of one of the arches at G is shewn above.

[1] "Sit thou on My right hand, and I will make thine enemies My footstool." — *Psalm cx.*

Then, to correspond to the new tall arcade, the walls of the north chapel were raised, and were provided with a new cornice; big traceried windows were substituted for lancets, and the present buttresses were put up. It will be noticed that the northern buttresses are not in a line with the two new piers, but are at the back of the vaulting shafts, and so in a line with the thirteenth-century piers which have been removed. The explanation is that these two buttresses do but case in the old buttresses put up *c.* 1224. To this period also belongs the doorway at O; and the piscina on the left at 17 (266) (Plan IV.).

When all this was done, the new Saint's chapel or Feretory could be taken in hand. Two piers would be erected in its axis, so that it could be vaulted in four bays: at *d* was inserted the handsome piscina on the right below.

Then the east wall of the south transept, HW, was pulled down, and a chantry chapel or chapels was built, with its south wall, VX, in a line with the end wall, WV, of the Norman transept. But the Feretory had been set out rather broader than this, no doubt for convenience of vaulting; the result is that its south wall, UV, does not line with that of the new chapels west of it. There must have been a pause between the building of the Feretory and the chantry chapels; for if it were all one piece of work, there would hardly have been two builders' doorways in the wall, but only one; at present there is one in the east wall of the Feretory at 7, and another in the south wall of the chantry chapels at 11. A separate doorway into these chapels was provided at *d*, which is evidence that they were private property; that this doorway led from the open air originally is shewn by the fact that the west side of it has a dripstone, but the east side none (259). All this work was in the Canons' part of the church, and we may date it approximately at *c.* 1320.

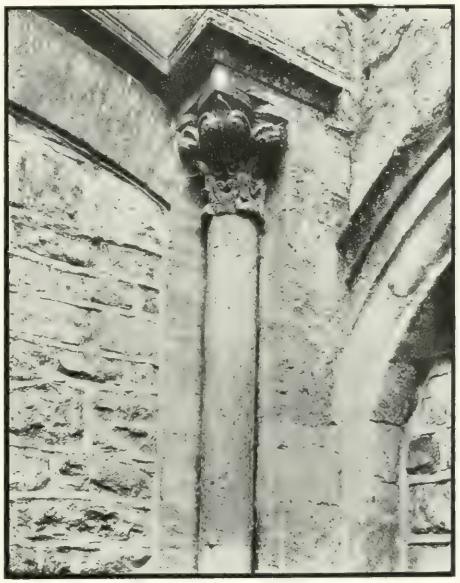
E. B. Dorchester

The next step was to continue the line of the chantry chapels from Y to BB and round to D, Plan V. Now the cloister, as at Leominster, was on the north; any parochial aisle therefore would be on the south. We assume therefore that the aisle, YD, is a true aisle and not a row of chapels, and was built by the parish for its own parochial services, and not by the governors of Wallingford for the Canons' services or for their own obits. Less money was spent on it. The illustration shews that the buttresses west of the stove-pipe are much less elaborate, and that the windows are smaller, and their dripstones are not continued to the buttresses as string-courses (256). The buttress at BB differs from all the rest on this side of the church in being set diagonally; it closely resembles the buttress P, at the north-east angle of the north chapel of the chancel, which is seen in the illustration (258); somewhere in the church a diagonal buttress must have been taken down, and reset here. When the new

parochial aisle and southern chapels were built, they must have taken up ground occupied with graves; so a charnel house was built underneath the parochial nave, and the bones removed from the graves would then be transferred to it through the opening constructed in the wall at 12.

This done, or contemporaneously with it, there was added a new short presbytery, and it was provided with a new piscina, 5, at the east end of the sedilia (263), the piscina at 17 of *c.* 1280 being too far away, now that the High altar had been removed a bay further east. Both these last sections of work may have been done *c.* 1340.

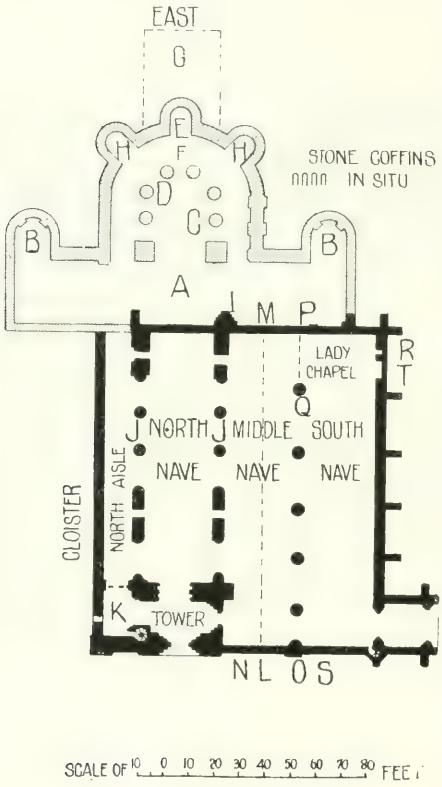
There was little left to do now in the church; but a south porch, AA, was added in the fifteenth century (258). Before we leave the mediæval church, it may be worth while to try to recover the position of some of its altars and the ritualistic use of different parts of the church; the results will be given on Plan V. The evidence on these matters as a rule consists of the presence of piscinas, aumbries, screens, and differences of level in the pavement of an altar platform, a presbytery, a choir, or a nave.[1] In the nave at 1 is an aumbry; therefore we assume an altar here in the centre of the nave with a doorway on either side through a Rood screen; above would be the great Crucifix or Rood. All west of this screen would be nave. As this was a church of Canons Regular, there would be, in addition, one or two bays further east, a Choir screen; we have drawn it a little west of the eastern arch, EF, of the crossing, to be clear of the blocked doorway, 1; we put the Choir screen just west of this blocked doorway. It would have a central doorway flanked by two altars. In the south aisle of the nave platforms mark the position of a parochial altar (259); on the right at 18 are a sedile and piscina, and at 13 an aumbry. At the east end of the north chapel of the chancel there are two steps up to an altar platform; there is a piscina, 4, on the south side and three aumbries, 3, on the north: here then was an important altar. Lower down the aisle, at 2, is another piscina; we therefore add an altar at 2 in Plan V., and screens to the east and north; it follows that this bay was not part of the northern chapel of the chancel, but was one of the eastern chapels of the north transept: no doubt the northern chapel of the transept also had an altar. In the vaulted chapels there is an aumbry at 6, an aumbry



F. B. Dorchester

[1] In most churches these levels have been destroyed by "the heathen in their blindness," the "restoring architects."

at 8, and piscina (266) at 9. Here therefore there may have been two altars; this is borne out by the disposition of the vaults. In the presbytery is a piscina, 17, disused when the High altar was moved eastward; and another piscina, 5, with sedilia (263) which belonged to the High altar of *c.* 1340. This latter probably stood not against the east wall, but more centrally, so that the celebrant could asperge it all round at the hallowing of the altars before High Mass. The Choir screen would, as usual, form the back for the return stalls of the choir, which therefore would occupy the crossing and perhaps the first bay of the chancel. The stalls, if so placed, must have cut off the transepts from the rest of the church; therefore they must have been used as chapels. Moreover, the northern row of stalls would cut off access from the chancel to the doorway J; that may be the reason why another doorway at I was inserted in its stead, enabling the Sunday procession to proceed more easily into the cloister. This however is uncertain; the cloister may have been reached from the presbytery through the doorway O. The portion of the chancel between the east end of the stalls and the High altar would form a presbytery of three bays. Of these the western bay would contain doorways on either side: the *ostia presbyterii*, *o*, *p*. The eastern bay would contain the High altar. The intermediate space would leave room for the celebrant and his servers. The presbytery would be separated by screens from the chapels on either side. It was quite a dignified presbytery as lengthened *c.* 1340; before that time the celebrations must have been somewhat cramped for space. There is no procession aisle round the High altar; the absence of this marks it off as being a church only of the second class.



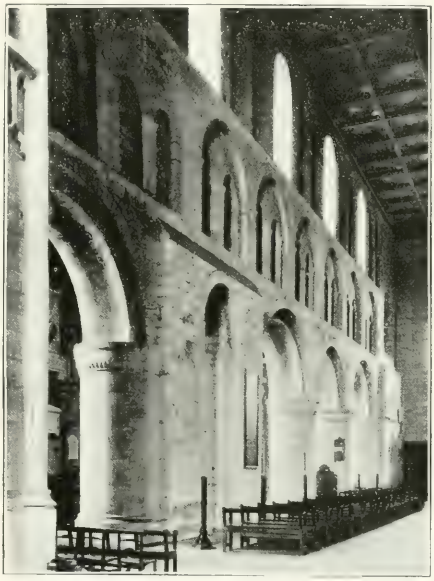
Leominster Church, Hereford

There is not much more to say. At the Suppression the church was bought by a Richard Beauforest, gent., for £140, say £1,680, and bequeathed by him to the parish. Thus Dorchester, like Selby and Tewkesbury, retained the whole church, and not merely the parochial part to which it was entitled. But the legacy must have been somewhat of a white elephant, for Dorchester is but a village; and in course of time the north transept, perhaps having become ruinous, seems to have been lopped off, reducing the church to the dimensions shewn in Plan I. Its history has been eventful and curious, and not easy to decipher: a

whole literature has grown round it. The account given above by the writer differs largely from the various versions put forth by Mr Addington, Mr Macfarlane, Professor Freeman, Sir J. H. Parker, and Mr James Parker; and this divergence of opinion is to be seriously noted, as shewing that any such reconstruction of architectural history from imperfect data, however plausible it may be, cannot be regarded as final, conclusive, or authoritative.

Leominster Church, Herefordshire.—Leominster church was partly monastic, partly parochial. To take advantage of the little river Pinsley, which runs to the north, for drainage, culinary purposes and drinking water, the claustral buildings were placed on the north of the church; the parochial part of the church, therefore, was on the south, which

F. B. Leominster: Norman Nave from North-east



F. B. Leominster: Norman Nave from South-west

was also convenient, because in that direction is Leominster town. The priory was a dependency of the Benedictine abbey of Reading, to which it was given in 1125. There was a consecration in 1130, and another in 1239. So much for the documentary evidence. Now let us look for architectural evidence. As it stands now, it is an astounding church, for as the black lines of the plan shew, it is nearly square (268). It consists of three naves side by side, each about 28 ft. wide, with a narrow aisle to the north; there is no chancel and no transepts; a western tower is engaged in the north nave. Let us walk round, beginning at R and stopping at O. All the way there is a tall, well-molded ground-course; and the windows have each some 820 ballflowers (590); obviously this south nave was built in the second quarter of the fourteenth century; to the same period belong the

sedilia at T, also studded with ballflower (268). But the piscina at R and the outer and inner doorways of the south porch are just as obviously part of the work consecrated in 1239: evidently they are not *in situ*. Now we resume our walk northwards from O. At this point there is a change in the ground-course; it is lower and of inferior design. Then we come to the tower, which has pointed arches inside and an obtusely pointed doorway; the detail of the capitals of the doorway shafts is advanced Romanesque; hardly earlier than 1170. In the north wall of the church fragments remain of the ancient cloister. Entering the church through the tower, we are plainly in presence of Norman work in the north nave and its low north aisle; in one bay of the latter there is a groined, *i.e.*, an unribbed quadripartite vault, like those in the crypt at Oxford (83). The north side of the nave is seen in 269 left, the south side in 269 right, the exterior of the latter in 270. This nave is Norman from pavement to roof; ground story, triforium and clerestory alike. So large a nave, however, must have had a south as well as a north aisle; and if we measure off in the west wall a length, NL, equal to the breadth of the north aisle, we shall find that at L there is a straight joint in the wall, shewing that originally the west wall only extended from the tower as far as L. Moreover, on the inner side of this bit of wall, NL, there still survives a Norman consecration cross. It is a fair conclusion that the Norman nave did originally possess a south aisle, and that its south wall originally extended from L to M. We have now got a nave with an aisle on each side. But a big priory church like this must have had a chancel, transepts, and a central tower. Where are they? Passing outside, we find that at I there still remains the south-west pier of a central tower; also that there is a wall, MP, which is evidently the west wall of a south transept; its exact length is shewn by the small eastern spur remaining. At this point the spade comes in. Excavations have shewn that there were two transepts, each with an eastern apsidal chapel, B, B; that there was a short apsidal chancel, C; that after the fashion of St. Augustine, Canterbury (122), it was surrounded by a procession path, F, from which radiated chapels at H, E, H (the chapel at E was enlarged later; G). We have now got a normal twelfth-century church complete; begun *c.* 1125, with the eastern portion consecrated in 1130, and the lower stages of the western tower built *c.* 1170.

F. B. Leominster. Exterior of Norman Nave from S.W.

We have still to deal with the middle and south naves. The latter we have seen is plainly *c.* 1320. What of the middle nave? Evidently it must be earlier than the nave added to it on the south; equally it must be later than the twelfth-century south aisle which was demolished to make room for it: *i.e.*, it must be thirteenth-century work. And it must

have had a south porch, whose two doorways were transplanted when the south nave was built; so also with its piscina.

As for the south nave, great changes have taken place in it internally. Up to the great fire of 1699, there seems to have been a wall from P to Q, screening off its eastern bay as a Lady chapel; if so, this would be part of the original south wall of the middle nave. There must have been fourteenth-century piers between the middle and south naves; but after the fire these were replaced by "a row of elegant Tuscan columns," for the latter Gothic piers were substituted by Sir Gilbert Scott; these are seen in pp. 269 and 270.

In the latter part of the fourteenth and in the fifteenth century there was the usual insertion of large windows; the great west window is modelled after the east window of Gloucester, which was glazed *c.* 1350; this west window probably replaced tiers of lancets; to this period also belong the two upper stages of the western tower.

So things remained till the Suppression, when the purely monastic part of the church, *i.e.*, the chancel and transepts, was pulled down, probably for the lead on the roofs, leaving only a Norman aisle, a Norman nave, a thirteenth-century nave, a fourteenth-century nave, and a fourteenth-century porch with thirteenth-century doorways.

It may be added that the cylindrical piers at J, J, seen in 269 left, were originally big compound piers like the pair to the west of them. The system of vaulting proposed, but not carried out, was altogether unique. The three parts of the nave where were the narrow arches and the thickenings, both internal and external, of the walls, seen in pp. 269 and 270, were to be covered with tunnel vaults; the other three parts with groined vaults. Thus the nave, counting from the east, would have had tunnel vault, groined vault, tunnel vault, groined vault, tunnel vault, groined vault. The scheme may have been abandoned, because the three tunnel vaults would have blocked three clerestory windows on each side of the nave.[1]

Wakefield Cathedral (272).—The classical paper on the English Parish church is that *On the Growth of the Fabric of All Hallows church, Wakefield*, A.D. 1100-1530, by Mr J. T. Micklethwaite, which forms a chapter of the *Cathedral Church of Wakefield*, by Mr J. W. Walker, F.S.A., published at Wakefield in 1888. Mr Micklethwaite was in charge of the "restoration" of the church for Sir Gilbert Scott from 1864 to 1874, and had exceptional opportunities for examining the fabric. The plans here reproduced are those of Mr Micklethwaite. For lack of space the methods employed in studying Shere and Dorchester are not here adopted; nothing but a short summary of Mr Micklethwaite's conclusions is given, supplemented by information supplied by Dr Walker.

Fig. 1, *c.* 1100.—The original church was probably cruciform and without aisles. There remains of it a thick mass of masonry, containing a staircase in the south-west corner of the south transept. Moreover a print of 1690 shews that the window in what was originally the end wall of the south transept was larger than the windows in the south aisles of the nave and chapel; this was natural, for it was the end window of a transept and not of an aisle; to this may be added the cores of the two western piers (recased) of the central tower.

Fig. 2.—A north aisle was added *c.* 1150, narrow and low. Of its arcade most of the bases remain, and the lower parts of two cylindrical piers, viz., the third and fifth from the east. There were five of these cylindrical piers, and therefore six arches and bays.

Fig. 3.—A south aisle was added *c.* 1220, narrower and lower than the present one. For some reason the piers on the south side were set closer together than on the north, so that there were six piers and seven arches and bays. These piers were alternately

[1] For fuller details see paper on Leominster church by the writer in *Architectural Review*, xxiv. 141, 85.

Fig-1

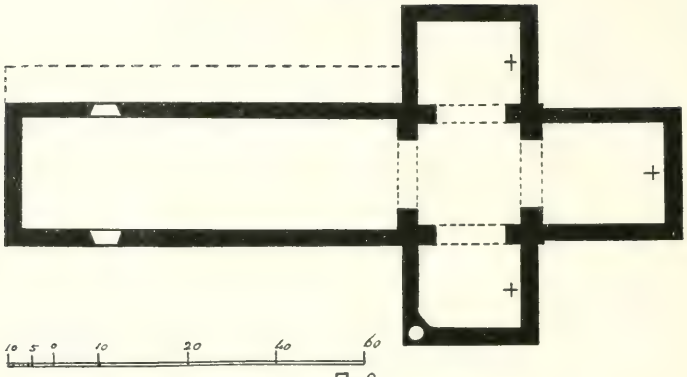


Fig2

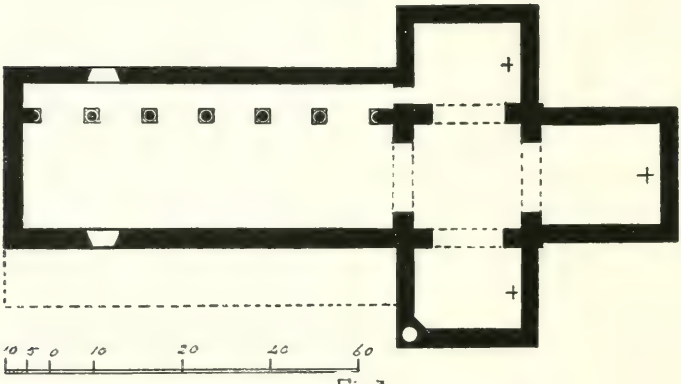
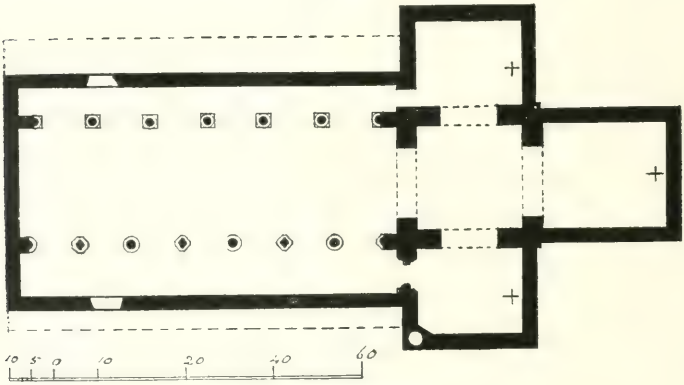


Fig-3.



L T M

Wakefield, Yorkshire

circular and octagonal. All their bases and the lower portions of all the piers survive; these lower portions have *two* stones, *i.e.*, a half-drum, in each course.

Fig. 4.

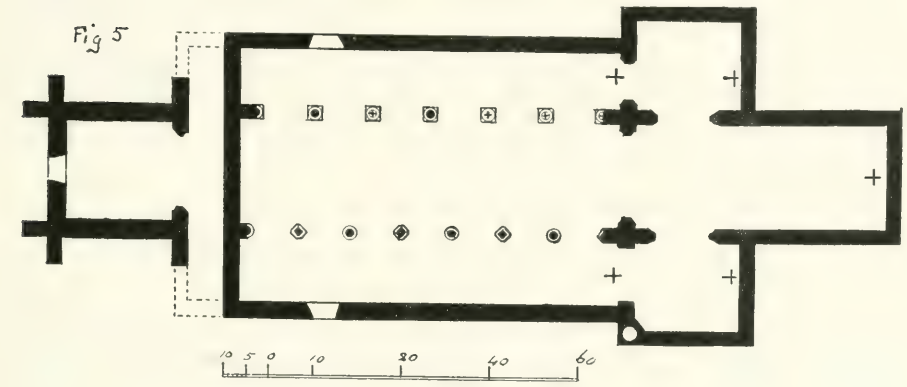


Fig. 6.

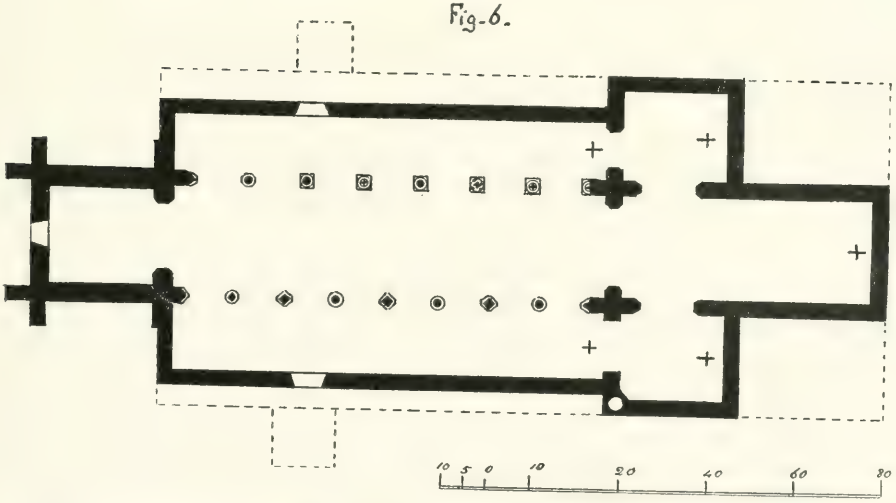
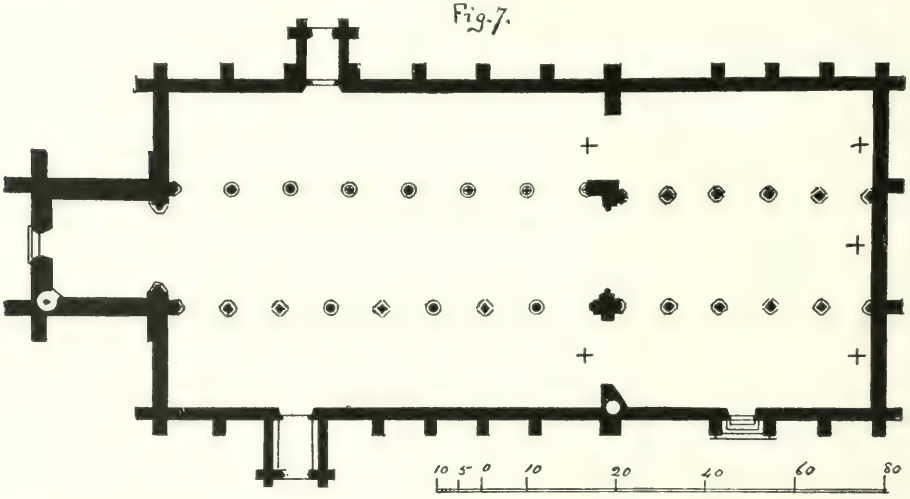


FIG. 4. Great works went on *c.* 1300, and must have been completed by 1329, when there was a reconsecration of the church: they included a new chancel, new aisle walls, and the remodelling of both pier-arcades of the nave. What brought about such a

large amount of work at this period? It may have been the fall of the central tower; which we may surmise was caused by the collapse of the north-west pier of the tower, and that the tower fell on the north arcade of the nave; for as we have seen, all the lower portions of the south arcade are intact, but only part of those of the north arcade. Of the chancel now built there remains no trace except the marks of its roof on the east side of the chancel arch, which is work of the early years of the fourteenth century. The tower was removed and the space beneath was added to the chancel. This also involved a new chancel arch. The aisle walls were then rebuilt so as to widen the aisles; corbels of the roofs of the new aisle remain at a level which shews that the new aisles were higher (and therefore broader) than those built *c.* 1150 and *c.* 1220, but lower (and therefore narrower) than the present aisles. New arches were built from the new

Fig. 7.



aisles into the transepts. In the new aisle walls tall windows would be inserted, and that the nave might get the full benefit of the light from them, the pier-arcades on either side of the nave were heightened. On the north side the lower portions of two only of the cylindrical piers of *c.* 1150 were retained, and they were about doubled in height; all the other piers were wholly rebuilt; these latter are all compound piers, *i.e.*, surrounded by shafts; the new compound piers were set on the old bases, which they do not fit. On the south side the piers of *c.* 1220 had all racked, *i.e.*, were leaning to the east, especially the fifth pier from the east; these were not straightened, but a new vertical portion was built at the top of each, so that the piers are crooked; the new vertical portions have only *one* stone or drum in each course.

FIG. 5.—When the aisles and chancel were ready for service, it would be time to turn attention to the tower. A new one was built to the west in 1409, entirely detached, as at Louth and Youlgreave, from the body of the church.

Fig. 6. The next thing was to remove the west front and lengthen the nave and aisles westward to the tower, inserting a new pier on either side where the west front had been. Of these two piers one is cylindrical, the other octagonal; but both are without hoodmolds and both have the same arch moldings. To equalise the arches on the north side, there is a deeper respond at the west end of the north than at that of the south arcade (Fig. 6).

Fig. 7.—Once more the old church was thrown into the melting pot. The result was here, as with so many large parish churches, to convert it into a great aisled parallelogram. And so greatly was this plan of church, with its admirable lighting and ample chapel space, esteemed, that from the end of the fourteenth century it was frequently copied in building *de novo*. North Walsham and St. Nicholas, Lynn, Norfolk, and Gresford, Cheshire, are precisely the same in plan as Wakefield, except that instead of the piers, arches, and walls being a hotch-potch as at Wakefield, they are of simultaneous and homogeneous design. First of all, the aisles of the nave were widened, till they were in a line with the end walls of the transepts, just as at Shere and Dorchester. At the east end of each aisle of the nave was an altar; in the north aisle that of St. Peter, in the south aisle that of St. Katherine; these aisles thus becoming practically two large independent churches. Secondly, the east walls of the transepts were removed, and their end walls were continued eastward, providing two equally broad and independent churches, to the north that of St. Nicholas, to the south that of Our Lady. The addition of these churches or chapels of St. Nicholas and Our Lady made it necessary to substitute piers and arches for the side walls of the chancel of *c.* 1300; and on these piers and arches was built a clerestory. The nave also in this fifteenth century was provided with a clerestory and re-roofed: this was the more necessary as the great west window of the nave of *c.* 1300 had been lost by building to the west of it the tower of 1409.

We will not pursue the history of the church further; it has grown greatly to the east in modern times, especially since it became a cathedral.

Waltham Abbey, Essex (276).—At Shere, Westhall, Leominster, Dorchester and elsewhere we have seen successive stages of work as completed by the builder. We will conclude with the work that is to be seen left unfinished in the nave of Waltham abbey. Round this nave a vast literature has grown. Distinguished architects, archæologists, and historians have dealt with its architectural history—Bishop Stubbs and Professor Freeman, the historians, Mr William Burges and Mr J. Reeve, the architects employed on the restoration of the church—all came to the impossible conclusion that the nave was part of the church built at Waltham by King Harold. Evidently it is largely modelled on Durham cathedral, and was not commenced before 1120. On the right of the illustration is seen one of the Norman bays. Its triforium chamber now has a single open arch. But on either side, in the centre, is a shaft with a capital which is doing nothing. We conclude that originally there was also a central shaft in the centre of the bay, as at Winchester (61), and that underneath the great arch were originally two minor arches with a spandrel of solid stone above them. Shaft, arches, and spandrel have all been removed. Moreover, if the string-course of chevron at the foot of the triforium arch be examined, it will be found that much of it is in plaster, the slabs of the original string-course having been removed. Again, the triforium arch ought to lead into a triforium chamber; but the photograph shews that there is no triforium chamber, simply because the aisle is not vaulted. However, on the aisle wall opposite the several piers there are marks shewing where vaulting shafts have been removed, and there are corresponding marks on the inner side of piers. We infer that originally there was a vault, and that both

the vault and its supports have been removed; it follows that originally there was also a triforium chamber. Now turn to the middle bay in the illustration. The pier-arcade is untouched; but in the triforium, for a semicircular arch of one order, there has been substituted a pointed arch of two recessed orders, the inner one of which rests on the otiose shaft. In the next bay to the left a still more drastic change has been made. The arch of the ground story

F. F. Waltham Abbey, Essex

with all its superincumbent masonry has been cut away, converting the new pointed arch of the triforium into an arch of a pier-arcade, and making the interior one of two stories and no longer of three. At this point the builders stopped; for the nave would not stand any more heroic restoration and threatened to fall on their heads. Otherwise they would no doubt have treated all the other bays in the same fashion as this on the left. Even this last is left unfinished: it was not intended to leave the pier in this rough state; it was no doubt to have been tricked off with shafting and the like. What was the object of all this hacking and

hewing? One object was to bring the design of the church into the style and taste of the day by converting Romanesque into Gothic. But there was another. A great quantity of stone was wanted elsewhere in the church and by purloining pier-arches and spandrels, triforium arches and spandrels, vaults and vaulting shafts, and even string-courses, it was to be had on the premises for nothing.

So far perhaps we could go on the evidence of the stones and mortar, but we could go no further. Any further explanation must be obtained from documentary evidence, and, as it happens, in this case it is forthcoming in the form of a notarial instrument preserved in the Public Record Office under the date 6th Sept. 1286, which recites the dangerous state of the nave and enjoins repairs on the parish. The aisle vaults had pushed out the aisle walls; so the vaults and their supports were pulled out; and to lighten the wall of the nave, its three stories were to be reduced to two. As we have seen, the project was far too hazardous, and had to be abandoned, and left the nave in the very curious state we see now. But a very large amount of stone was cut out, and in all probability it was with this stone that much of a new west front was built *c.* 1316.

Space does not permit to extend the analyses of the growth of churches; but a list of a few churches of exceptional interest is appended, with bibliography in some cases; in addition the volumes of the Victoria County History should always be consulted. With these aids visits to the churches will be found most interesting.

Astbury, Cheshire. William Pullinger in *Transactions of the Lancashire and Cheshire Antiquarian Society*, vol. x.

Barnack, Northants. Canon Syers and J. T. Irvine in *Journal of British Archæological Association.*

Branscombe, Devon. Pamphlet by Miss E. K. Prideaux, Exeter, 1911.

Burford, Oxon. Plan by W. A. Pite in *Builders' Journal*, June 20, 1900. Plan and description by Harold Brakspear in *Archæological Journal*, lxvii. 392.

Chipstead, Surrey. Pamphlet by Major Heales. Paper by G. E. Street in *Ecclesiologist*, New Series, viii. 31. Also *Surrey Archæological Collections*, vol. vii.

Cirencester, Gloucester. Francis Bond in *Wilts. and Gloucestershire Standard*, Dec. 10, 1898.

Claverley, Salop. P. M. Johnston in *Archæological Journal*, lx. 51.

Dunster, Somerset. Archæological Journal, xxxvii. 273.

Grantham, Lincolnshire. A. Hamilton Thompson in *Archæological Journal*, lxvi. 401.

Guildford St. Mary, Surrey. J. H. Parker in *Archæological Journal*, xxix. 170; and Rev. H. R. Ware in *Three Surrey Churches.*

Higham Ferrers. Churches of Northants, i. 18-21.

Leicester St. Mary. G. A. Poole in *Associated Societies' Reports* (Leicestershire), i. 4; W. H. Bidlake in *Building News*, Nov. 2, 1883.

Madley, Herefordshire. F. R. Kempson in *Building News*, Jan. 27, 1882.

Spalding, Lincolnshire. E. Moore in *Fen and Marshland Churches*, iii. 18; also *Archæological Journal*, lxvi. 394.

Stoke d'Abernon, Surrey. P. M. Johnston in *Surrey Archæological Collections*, vol. xx.

Wath, Yorkshire. H. B. M'Call's *Richmondshire Churches.*

Whittlesea, Cambridge. Fen and Marshland Churches, ii. 17.

Wisbech. Dean Howson in *Fen and Marshland Churches*, i. 19.

Witney, Oxon. Mr Harold Brakspear in *Archæological Journal*, lxvii. 380.

R. W. D.

Gloucester: North Ambulatory

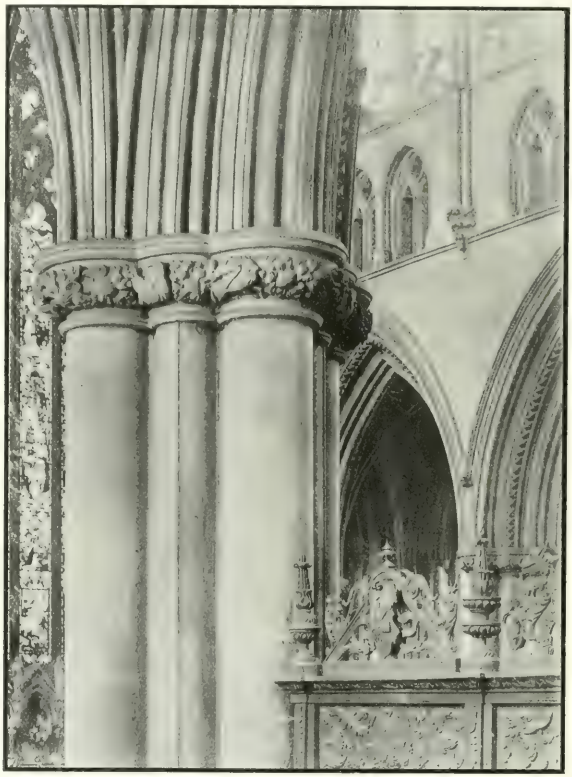
CHAPTER V

VAULTING

"The clustered shafts sprang in slender sheaves, their groups as light as if they might bend at a breath; yet it was not till they reached a giddy height that their stems curved over, flying from one side of the nave to the other to meet above the void, mingling their branches and blossoming at last in the foliated bosses of the vault."—HUYSMANS.

IN the second chapter we passed in succession through the requirements of ritual in the churches of monks and canons and in the parish churches. It was the ecclesiastical authorities who settled what the requirements were; it was left for the architect to devise a plan by which these requirements should be satisfied: how this was done has been pointed out in the third and fourth chapters. The plan being settled, the main architectural task still remained. The primary object of architecture is to provide shelter; *i.e.*, roofs. In the case of a large church, this might mean the provision of roofs over two or three acres of ground. And as roofs are liable to destruction by fire, it was desirable to build beneath them a ceiling of stone; what is called a vault; that the fire should not extend to the church below. It is to be remembered that in the Middle Ages fires were much more common in churches than they are now; not only because of intentional conflagrations during periods of war, but because lightning conductors had not been invented. When the wooden roof of an unvaulted church caught fire, the result was very disastrous. For a time it was the clerestory that received all the damage; as may be seen in Norwich by ascending to the clerestory, where the damage done by the fire of 1463 is plainly visible. After a time the roof fell in, and any woodwork below, especially the stalls, caught fire. This led also to the calcining of the piers which, as in Carlisle choir (280) after the fire in 1292, would have to be rebuilt; if the aisles were vaulted, as at Carlisle, the aisle walls and their arcading might escape injury. It was the front of the triforium arcade which escaped most lightly; as may be seen in Chichester nave, where the ground story and clerestory had to be remodelled after the fire of 1187, but the triforium arcade, being little damaged, was retained unaltered. How very dangerous it is to build a large church without vaults was realised lately in the fire at Selby; in Chartres cathedral, on the other hand, which is vaulted, the great fire which consumed the roofs in 1836 was unable to reach the church below.

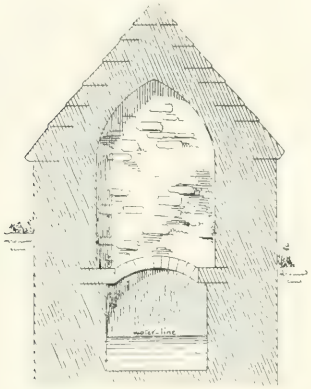
When a vault was built, being of arcuated construction, it exercised great pressure against the side walls; an elaborate system of abutment had therefore to be devised to prevent the walls being thrust out; this took the form of buttresses, flying buttresses, and pinnacles. Both vault and roof had to have



L. H. C. Carlisle Choir

supports; these supports or walls either sprang from the ground or rested on arches which were themselves carried by piers or pillars: the matter of supports therefore involves the consideration of walls, their foundations, their ground-courses, their string-courses, their corbel tables, their parapets and their gargoyles; also of arches and piers, together with the various members of a pier, the abacus,

capital, base, and plinth. The walls, moreover, have to be pierced with doorways and windows. Also the vaults have to be protected from rain and frost by roofs.



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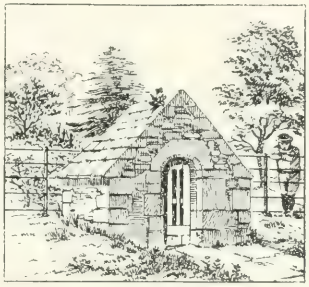


Well at Castle Ashby

L. D. W. Abbotsbury

Abbotsbury

Some system of lighting has to be devised, and towers have to be provided for bells; spires may be added. Finally all these factors have to be welded together both internally and externally into an artistic design.

Of all these factors of the design of one of the Greater churches the vault was the most important; it was indeed the presence of vaults that made what is called Gothic architecture. The design of the vaulted churches is indeed found to some extent in the wood-roofed churches, but it originated in the former. We will begin therefore with the consideration of the vaults of the Greater churches.

In the Appendix, p. 957, the design of the early Christian basilica is discussed; how its plan was modified to suit mediæval ritual has been described in Chapter III.; it remains now to be seen how the wood-roofed basilica was transformed into a vaulted church without destroying its top-lighting; next to the difficulties of fireproofing the church by means of vaults, the lighting problem caused the greatest amount of trouble to the mediæval builders.

F. R. Willingham, Cambs.

Vaults of a rude character survive from pre-Conquest days, *e.g.*, in the crypts of Ripon, Hexham, Wing (118), Repton,[1] and the porch of Monkwearmouth; but the story of the English Gothic vaults starts, not with these, but with the early eleventh-century churches of Normandy. In ancient Rome several forms of vault had been in use; the dome, the semi-dome, the tunnel vault, the half tunnel, the groined vault. The first of these, the Dome, is practically unknown in the Romanesque of Normandy and England. Very many churches, however, had semicircular apses and these would frequently be constructed with a semi-dome. It is difficult to roof an apse with wood; but if a semi-dome were employed, the roof could be constructed of solid stone within and without, and no wood covering would be necessary: it is this probably which brought it about that the Roman semi-dome remained in use in mediæval days, although the dome in most districts was unknown. An early example of the semi-dome is seen in the apse of St. John's chapel in the Tower of London, *c.* 1080; others occur at Kilpeck (187) and Moccas, Herefordshire (236), Lastingham and Birkin, Yorkshire; and in the transeptal apses at Tewkesbury (59), Christchurch, and elsewhere: usually the semi-dome is strengthened by radiating ribs.

Another form of vault is the Tunnel vault, of which the ordinary railway tunnel is an example.[2] This occurs in England on a small scale in passages; *e.g.*, in the

[1] In the Repton crypt some of the compartments shew rude attempts at a cross-vault.

[2] These are also designated *waggon* or *barrel* vaults, or, in France, *cradle* vaults. Where the vault rises

Dark Entry of the cloisters of Westminster abbey; also in comparatively small buildings. The earlier tunnel vaults were semicircular, *e.g.*, Reading Chapter house; but at Gloucester the tunnel vault of the Chapter house is pointed; which reduces its thrust. Tunnel vaults were never used on a large scale in English churches; the chief example is the little chapel of St. John in the Tower of London, where both the nave and the upper aisles have semicircular tunnel vaults. In Burgundy, Auvergne, Poitou, and Provence, churches of the highest importance had tunnel vaults over their naves in Romanesque days; *e.g.*, Cluny, Issoire, St. Sernin, Toulouse, Notre Dame, Poitiers, St. Trophime, Arles. The Cistercians, who in their earliest churches largely reproduced the current architecture of Burgundy, put up tunnel vaults in aisles and chapels at Fountains[1] and Kirkstall.

H. E. I. Fountains: Aisle of Nave

In a few cases, where stone was plentiful and wood was scarce, or where fireproof construction was required, tunnel vaults were constructed with their outer surface carried up so as to form a gable; this surface was then covered with slabs, a wooden roof being dispensed with altogether; churches so constructed with the gabled roof and the vault in one solid mass are common in Pembroke, *e.g.*, Manorbier and Monkton, and in Guernsey; other examples are the treasury of Merton College, Oxford; also Abbotsbury chapel, Dorset (281), situated on a bleak headland above the sea. Similar construction is found in a considerable number of church porches. An example is illustrated of a well roofed over in this fashion (281).

A variant of the tunnel vault is one in which the vault consists of slabs supported by arches set but a little distance apart, which may be supported by skeleton ribs. It is a sensible mode of construction where long blocks of stone can be obtained; it occurs at Minchinhampton on the Cotswolds, an oolite district; at

at the centre, the term *barrel* vaults is correct; where, as in England, the vault has normally a horizontal ridge, the term *tunnel* vault is preferable.

[1] In the aisles of Fountain's nave (283) the transverse arches of the tunnel vaults are semicircular, but the pier-arches are pointed. The form of the tunnel vaults was determined by the latter. The system employed, therefore, was one of a series of pointed tunnel vaults set at right angles to the axis of the aisle and resting on walls built up on the semicircular transverse arches of the aisle.

St. Mary's, Scarborough, and over the vestry of Willingham church, Cambridgeshire[1] (282), and the south porch of Patrington, Yorkshire.

A half tunnel or *demi-berceau* was also employed; viz.: in the triforium chamber of Gloucester choir; a precedent for it existed in Normandy at Cérisy-la-forêt and probably in the Abbaye-aux-hommes at Caen.

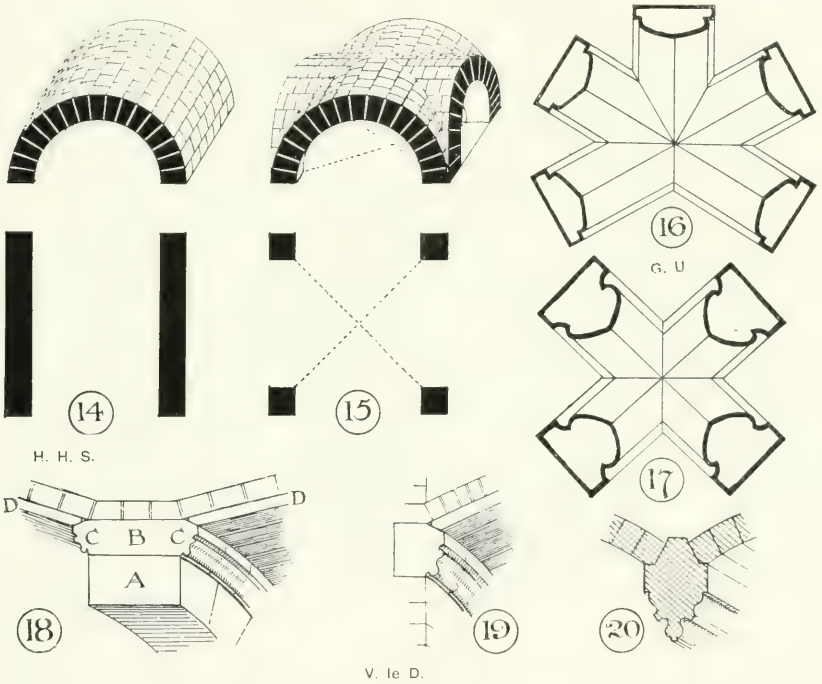
Of the above forms of Roman vault only two produced important schools of church architecture. The dome became the leading factor in the great Byzantine school, whose noblest memorials are to be found in the *brick* churches of S. Sophia, Constantinople, dedicated in 537, and St. Mark's, Venice, which was building about the time of the Norman Conquest of England. In the Latin Church it is represented by two Romanesque schools; in both of which not only the crossing, but the nave, chancel, and transepts are roofed with *stone* domes. One of these schools provides the nave with aisles; its only representatives are the cathedral of Le Puy, commenced late in the eleventh century, and the abbey church of St. Hilaire, Poitiers, some part of which was consecrated in 1049; in both cases the domes must be considerably later in date. The other school has no aisles to its naves, and its centre seems to have been Périgueux; of its churches Fontevrault is the most northern representative; other important churches are St. Front, Périgueux, probably commenced soon after the fire of 1120, the cathedral of Angoulême, a few years earlier in date (the new cathedral at Westminster closely resembles the latter); the cathedrals of Périgueux and Cahors; also St. Emilion, Souillac, Solignac, and St. Barnabas, Cyprus.[2]

Romanesque churches ceiled with tunnel vaults, on the other hand, are very numerous. The favourite method was to make the tunnel vault of a nave spring from immediately above the apexes of the pier-arches; this gave a one-storied interior, without either triforium or clerestory, and therefore badly lighted: it was in common use in Poitou, and sporadically in many districts; a good representative is the church of Notre Dame, Poitiers, built early in the twelfth century. A second school superposes a triforium arcade on the top of the pier-arches, and makes the tunnel vault spring from the top of this triforium arcade; this gives a two-storied interior without clerestory, and therefore badly lighted; churches of this type are most common in Auvergne, the Toulouse district, and Spain; representatives are Issoire in Auvergne, early twelfth century, St. Sernin, Toulouse, *c.* 1118, and the cathedral of Santiago, Spain. In the third school a clerestory ranges above the triforium arcade, and the tunnel vault springs from the top of the clerestory wall; there is, therefore, both a triforium and the clerestory, and the interior is one of three stories, and is well lighted; the finest examples of this type are the cathedral of

[1] Minchinhampton is illustrated in *Gothic Architecture in England*, 286, 287; Scarborough in 282.

[2] See Enlart's *Architecture religieuse*, 211; Mr Sharpe's *Churches of the Charente*; and the French Archæological Society's *Guide to the Congress at Angoulême*, 1912.

Autun, dedicated in 1132, and the Cluniac church of Paray-le-Monial, dedicated in 1104; this was the typical method of vault-construction in the Romanesque school of Burgundy. In the fourth school, also, the tunnel vault springs from the top of the clerestory wall; but whereas in the third school the aisles have groined vaults and there is a triforium, and consequently an interior of three stories, in the fourth school the aisles are ceiled with a half-tunnel vault (*demi-berceau*), there is no



triforium, and consequently the interior has but two stories. Of this type of church Provence is the centre; its chief representative is the imposing church of S. Trophime, Arles, finished *c.* 1180.[1]

Of these five schools three failed to solve the problem of converting a church basilican in plan, *i.e.*, with aisles and provided with a clerestory, into a vaulted

[1] For fuller details and illustrations see the writer's paper on "The Classification of Romanesque Architecture" in the *Journal of the Royal Institute of British Architects*, 22nd April 1901.

cathedral; the school of Périgueux, because it omitted the aisles, and the schools of Poitou and Auvergne, because they omitted the clerestory. But the remaining three, the schools of Le Puy, Burgundy, and Provence, completely and successfully solved the great mediæval problem, producing between *c.* 1080 and *c.* 1180 churches of monumental grandeur and stability. But their very success was their undoing. Having done their work, there was nothing left for the builders to do. Le Puy, Autun, S. Trophime, Arles, are all perfected; every constructional problem has been solved. No further development, no further progress was possible in churches ceiled either with domes or with tunnel vaults. But there was another form of vault with which also the problem was attacked, and out of the difficulties which it engendered there came development and progress, and, ultimately, Gothic architecture. This was the groined vault of ancient Rome.

GROINED VAULTS

The Roman groined vault is one which is produced by the intersection of two tunnel vaults or half cylinders at right angles to each other (285). Suppose that a corridor covered with a tunnel vault crosses another similar corridor; the vault where they intersect will consist of four portions of cylinders; two belonging to one of the tunnel vaults, and two to the other. The curves of intersection will form sharp edges, which are styled *arrises* or *groins*; and the whole vault, consisting of four portions of cylinders, is a quadripartite intersecting groined vault, or, more shortly, a *groined* vault.[1] From the eighth century onward these groined vaults were copied up and down Western Europe from the numerous examples which existed in profusion all over the Roman Empire. But the builders could not copy the Roman methods of construction; these had passed out of mind and memory centuries before. New methods of construction had to be devised, and very poor methods they were. The Romans with their scientific methods[2] had been able to erect groined vaults over buildings with a span of more than 80 ft.; the Romanesque builders put up very few high groined vaults at all; perhaps the most daring are the high vaults of the naves of Speyer cathedral and Vézelay abbey church; as a rule they were only employed for low and narrow spans; *e.g.*, in the undercrofts of Westminster abbey,

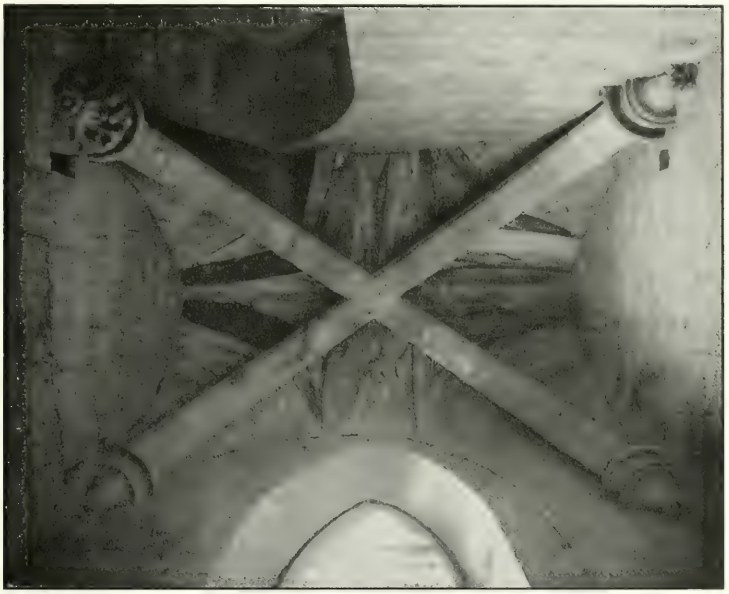
[1] The term *groined* vault is often wrongly applied also to intersecting vaults with *ribs* instead of groins. The two should always be kept distinct. The following is the correct terminology of vaults:—

VAULTS

Domes	Tunnel vaults	Half-tunnel vaults	Cross vaults	
			Groined vaults	Cross-ribbed vaults

[2] These are described in Choisy's *L'art de bâtir chez les Romains*.

c. 1066; Durham castle chapel, 1072-1080; Lastingham crypt, 1078-1088 (82); the aisles of St. John's chapel in the Tower of London, *c.* 1080; the crypt of St. Peter-in-the-East, Oxford (83). In spite of their many disadvantages, groined vaults remained long in use, especially in aisles; in Lessay abbey, Normandy, though the nave has a cross-ribbed vault, the aisles have groined vaults; and at St. Bartholomew's, Smithfield, though it was not commenced till *c.* 1123, the aisles



S. S Lincoln Minster

are groined. At Ely the western bays of the nave can hardly have been finished before 1160, but, copying the eastern bays, they have groined vaults.[1]

The intersecting vault, whether groined or ribbed, has three great advantages over either domes or tunnel vaults: and, because of these, completely superseded both in Western Europe by the beginning of the thirteenth century. A dome requires continuous support all round for its rim. A tunnel vault, *e.g.*, a railway tunnel, does not require support for its ends, but it requires continuous support for

[1] The groined vault persisted at Provins till late in the twelfth century. See Mr Lefèvre-Pontalis' *L'architecture gothique dans la Champagne méridionale*, p. 9.

the whole length of its two sides. On the other hand a groined vault requires no support for either its ends or sides, but only for its corners: it can therefore be poised, if desired, on four isolated piers, *e.g.*, on four columns in a crypt, as at Oxford (85). Secondly, as its four sides form arches, the space beneath the latter can be used for the insertion of windows; these do not pierce the vault, but only the wall at the sides of the vault, and this wall is easily pierced, as it does not need to be built thick. But a window inserted at the same height in a dome or a tunnel vault would have to be pierced through the thick masonry of the dome or tunnel. Thirdly, if an aisle had to be vaulted, and a tunnel vault were employed, its lowest course would have to be higher than the apex of the arch leading from the nave into the aisle; its crown, of course, would be much higher still; so that the whole aisle would have to be built very lofty, and great expense would be incurred. On the other hand the crown of a groined vault can be made of precisely the same height as the pier-arch, and the aisle kept low.

The mediæval groined vault, rude as it is, gave the builders much trouble. The first thing to do was to put up an exact model of it in wood; and this wooden vault was difficult of construction; for it involved the use of planks; and in the days before saws, whether worked by hand or by steam or water power, planks must have been difficult to make; all you could do would be to go into the forest, cut down a tree, trim it, and then with an adze hack away first one side of the trunk and then the other; result a plank; one tree, one plank. For the wooden vault, or "*centre*,"[1] as it is called, supports would be necessary. If it was an aisle that was to be vaulted, on one side the aisle wall could be utilised, and on the opposite side the piers of the arcade; if it was a nave, then the vault would be supported to the north and south by the clerestory walls. If it was the vault of a nave, transverse arches would be thrown across from one clerestory wall to the other; if it was an aisle, they would be thrown across from every pier to the aisle wall opposite (370.4). These transverse arches were usually omitted in Roman work, nor are they present in the groined vault of Rochester cathedral crypt; but they are very seldom omitted in English Romanesque vaults. On the wooden centre,[2] when erected, a thick layer of mortar was laid, and in this mortar were packed on edge thin rough pieces of *rubble* (*i.e.*, undressed stone); by means of these, with the aid of more mortar and smaller pieces of rubble, the arched form of the centre was reproduced. When the mortar had set, the centre would be removed, and then could be reused to erect another section of vault.[3] A vault constructed in this way of rubble and mortar was practically a homogeneous

[1] A "centre" for a small tunnel vault is figured on p. 293.5.

[2] It is to be understood that separate centres would be required for the transverse arches. What follows refers to the four cells of the vault bounded by the transverse and wall arches.

[3] When the centre was removed the top planks sometimes stuck to the mortar and were left embedded in it; this may be seen in the staircases of Rochester castle and the ribbed rubble vault of a staircase-chamber in the north-east transept of Lincoln minster; also in several crypts (287).

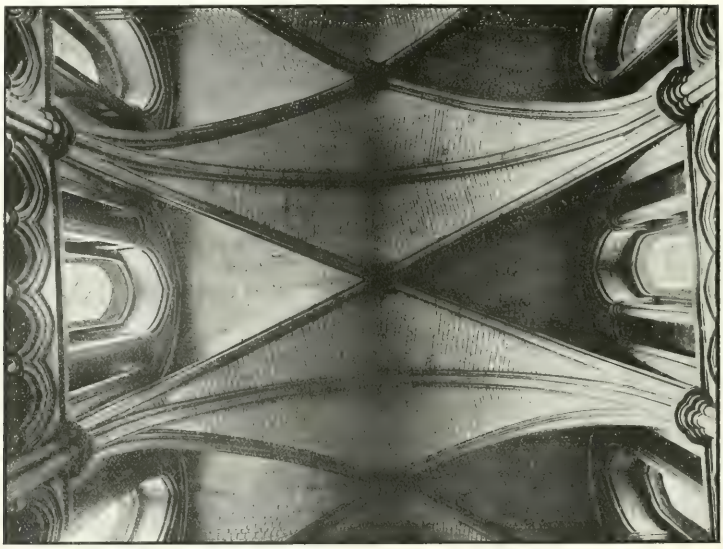
mass of concrete; and being but to a slight extent arcuated in construction, had but small lateral thrust, and therefore needed but little abutment. On the other hand, since the rubble mass was thick and heavy, it needed very strong supports; groined

A. B. Saint Serge, Angers

vaults, therefore, were well suited for Romanesque churches, where the walls, piers, and arches are massive and strong, but the buttresses little more than decorative.

A difference of construction is here to be noted, which, though slight, had great importance in the history of vault development. A vault-bay may be built with its crown higher than its sides; or the crown of the vaults and the apexes of the side arches may be of the same height. If the latter system is adopted, the vault will

have two level horizontal ridges at right angles to each other. If the former is preferred, then the vault will not have level ridges, but they will curve upwards to the centre; such a vault (*bombé*) is domical in appearance;[1] it is something of the shape of an umbrella.[2] Each method no doubt had its advantages; each in some way made vault-building easier for the masons. In the latter case the advantage is obvious. If the sides of a vault are built somewhat vertical, the vault will be much more stable than if it is flatter in form.[3] Moreover any thrusts it may exert will be



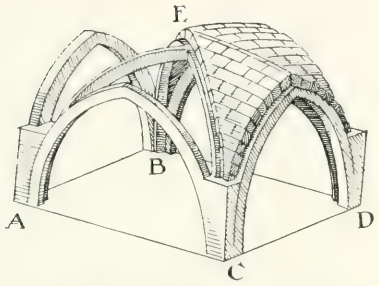
F. K. P. Southwark Cathedral: Chancel

brought down much more vertically, and are proportionately less powerful and less difficult to stop; in other words, less abutment is needed. Again, when a centre

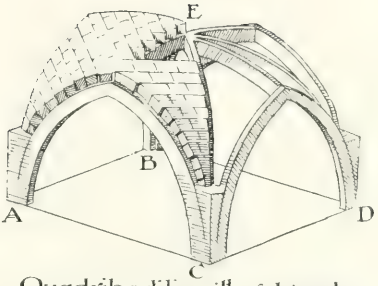
[1] This does not mean that it is domical *in construction*; a true dome is built up, rim upon rim, of horizontal and not of radiating courses. Examples of domical cross-vaults are shewn on 291.1, 2, 3, 5; and of level-ridged vaults on 291.4, and 293.4.

[2] In the remarkable Gothic churches of Poitou and the neighbourhood, *e.g.*, St. Serge, Angers, every vault-bay is built umbrella-fashion (289).

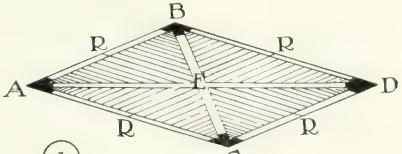
[3] In Gothic vaults built of courses of shaped blocks, *i.e.*, *ashlar*, there was a still more important advantage; viz., that if the sides of the vault were built very steep, the lower courses, with the aid of a little mortar, could be built up without centering. It is obvious that wood centres, in the case of such a vault as that of St. Serge, Angers, would be required to build the upper courses only; this would mean a great economy in centering.



Quadripartite · French Web



Quadripartite with ridge ribs
English Web



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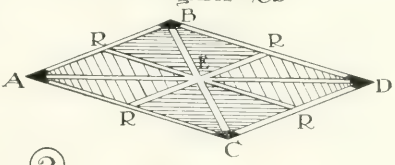

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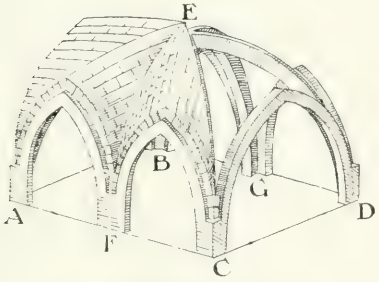
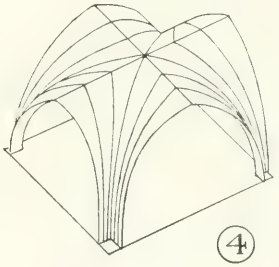


Sexpartite · French Web



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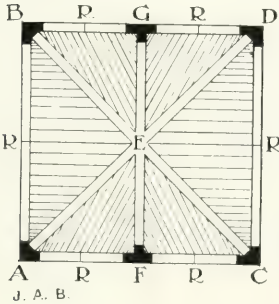

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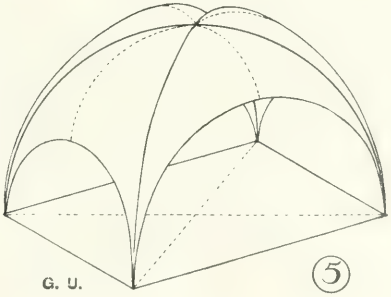


(5)

G. U.

was to be made, working drawings would first be prepared full-sized. The natural course to adopt would be to employ semicircular arches only, viz., four for the outer arches of the vault, and two for the cross or diagonal arches. But since the diagonals of a square or of an oblong are longer than its sides, the diagonal arches of the vault would rise considerably higher than its sides; *i.e.*, the vault would be domical (291.5). The domical type of vault, therefore, had this advantage also, that it simplified the preparation of the working drawings.

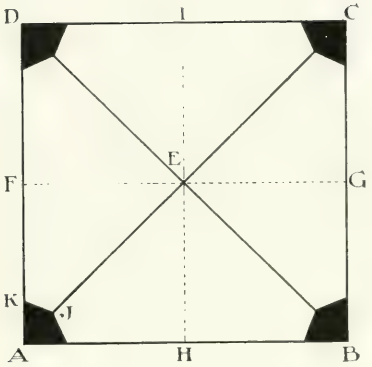
It is not so easy to see what was the advantage of having the ridges level. We suggest that it was to enable vaults to be built on continuous centering. Each bay of a groined vault consists of two sections—two of a longitudinal and two of a transverse barrel vault—and between the several bays of the aisle, in groined vaults, were semicircular transverse arches. These transverse arches the masons took as their guide. In building a groined vault over an aisle divided into bays by transverse arches, they made the longitudinal sections of the vaults on either side of each transverse arch of the same height, breadth, and shape as that arch. Thus, as the diagram shews, the masons could go on building the vaults continuously from one end of the aisle to the other, the planks with their supports being moved on as fast as the work progressed (293.6). On the other hand, if a vault-bay were built domical, then, when it was finished, the whole of the centering would have to be taken to pieces, before it could be removed and put up again in the adjoining bay. Again a vault with horizontal ridges is considerably lower than a domical one; for the latter the aisle walls had to be carried up several courses higher, increasing the cost without improving the appearance of the church; the same would be the case, to a still greater extent, in a *high* vault.[1]

Though there are exceptions in both countries, the tendency was more and more for the vaults of Normandy and England to be level-ridged, but for the French vaults, especially the Early Gothic vaults of the Île de France, to be domical.[2] Among English examples of domical vaulting may be mentioned those of the aisles and chancel of St. Cross, Winchester (299); the aisle of the north transept of Ripon (315); Glastonbury Lady chapel and Wells cathedral; New Shoreham; and some of the vaults of the cloister of Westminster abbey. On the other hand Amiens and some later French vaults have level ridges.

With their groined rubble vaults, in whichever way constructed, the builders grew exceedingly expert. The rectangular bays of a nave-aisle were easy enough to vault; but just as much success was gained in vaulting the bays of a semi-

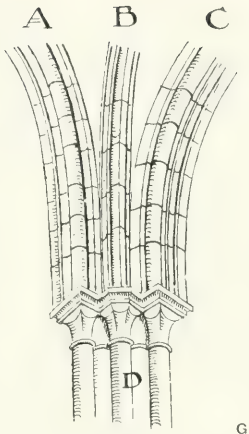
[1] This is a convenient term for a vault built from the top of one clerestory wall to the top of the opposite one.

[2] In other words the Île de France vaults were usually formed by the intersection of two half *barrels* with bulging sides; the English vaults by the intersection of two half *tunnels* with horizontal ridges.



W. E.

(1)



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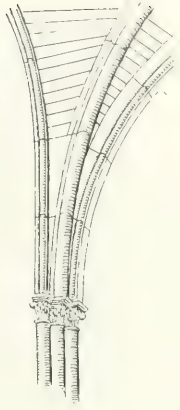

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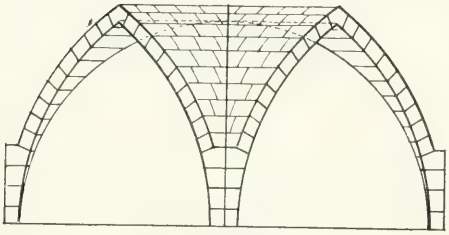

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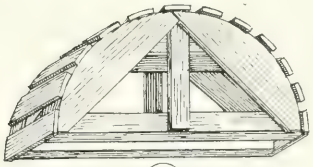

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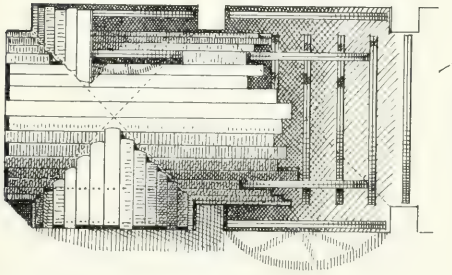

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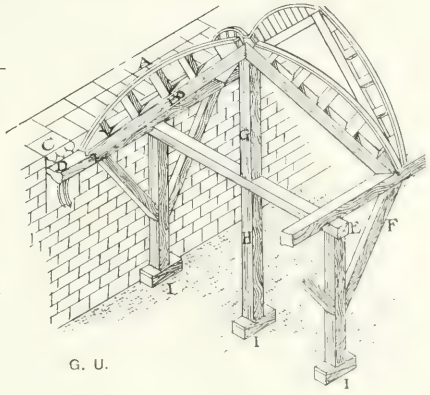


G. U.

J. F. H. Selby : Aisle of Nave

J. F. H. Hemel Hempstead Chancel

circular ambulatory, such as that of Gloucester (278) and Norwich (130), whether it fell into oblongs, trapeziums or triangles, whether it had straight or curved sides.

But to put up one of these vastly heavy vaults over a lofty and broad nave would require enormously strong and expensive scaffolding; and though the builders seem to have set out some of their greater churches, *e.g.*, the chancel of Hereford (744), for a high vault, yet in the end, always, so far as we know, they shrank from the attempt.[1] Nor on the Continent are high groined vaults anything but rare. Other methods had to be devised before high vaults could be built with ease over high and broad naves; the masons who devised those methods invented Gothic architecture.

CROSS-RIBBED VAULTS

When the centering is up, a rubble vault is easy to construct; the blocks can be packed together wedgewise in the mortar bed almost as fast as they can be handed up on to the scaffold. The problem was to simplify the centering. The solution of the problem involved the erection of two sets of centering; the first of stone, which was to be allowed to remain as an integral part of the vault; the second of wood, which was supported by the stone centering; finally, on the wood centering was built the *web* of the vault.[2] The stone centering consisted at first simply of two transverse arches and two diagonal arches of stone; the latter, being set diagonally, of course intersected; producing eight *ribs*.[3] The four diagonal ribs divide the vault into four *parts* or *cells*; it is therefore termed a *quadripartite* vault; and because the four ribs cross the vault at its centre and intersect, the vault is an *intersecting quadripartite ribbed* vault; or, more simply, a *cross-ribbed* vault. The Romans had employed similar methods, and no doubt for the same reason; viz., to economise centering; but the ribs of their vaults were usually flush with the web, and both ribs and web were covered with plaster, which was then painted or received other decorative treatment. Occasionally, however, the ribs projected in front of the web, and remained visible when the latter was completed;[4] this, however, was quite exceptional. It is improbable that the mediæval builders knew of either method; certainly not the latter.

The new procedure was as follows. First two transverse and two diagonal arches were built in each bay of the nave or aisle; these of course were built on

[1] It is perhaps more likely that, as with the nave of Christchurch, Hants, the chancel was originally roofed in at the triforium level.

[2] By the *web* or *filling in* of a vault is meant those parts of a vault which lie between the stone ribs.

[3] Normally, a *rib* is a half of one of the arches supporting the web of a vault; sometimes, however, the other half-arch is omitted, there being no supports to receive it; *e.g.*, in the quinquepartite vaults of the aisles of Lincoln choir.

[4] Roman vaults of the second century with visible ribs are illustrated in Rivoira's *Lombardic Architecture*, i. 246-248.

wooden centres (293.7). The two diagonal arches by their intersection divided the space to be vaulted into four triangular cells, and these could be vaulted one at a time, *e.g.*, St. Cross (299); the centering which had been employed in the first being reused in the second third, and fourth cell successively. In erecting a groined vault, centering had to be erected to carry the whole vault; in a cross-ribbed vault centering was wanted for only one-fourth of the vault. Moreover, in a groined vault half of the whole weight fell on the two transverse arches, and these had to be broad and massive, and had to have broad and strong centres for them to be erected. But in

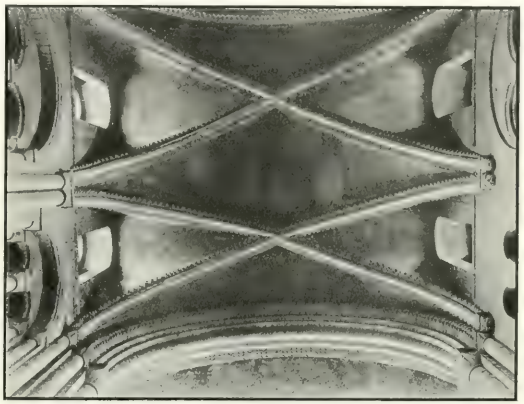
Lessay, Manche

Peterborough: South Aisle of Nave

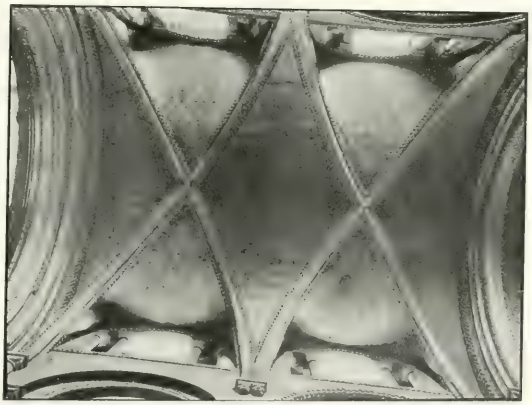
a cross-ribbed vault much of the weight falls on the diagonal arches; the transverse arches, therefore, could be built, and after a time were built, less massive and with less centering, *e.g.*, Beverley choir (300). In both ways a very considerable economy of centering was effected. It is not certain what particular method was employed by the masons for filling up the cells. Probably planks were laid across from rib to rib, and on them was built the web; these would be reused in all other cells of the same shape and dimensions.[1] In the diagrams 285.18 and 19, on p. 285, vaults are shewn in which the planks beneath the web have not yet been withdrawn.

[1] If the bay was square, all four cells would be identical in shape and dimensions; if it was an oblong bay, *e.g.*, in a nave, the northern and southern cells would be alike, as also the eastern and western.

A vault so constructed on cross-ribs like that in the diagrams (291) has other advantages over the groined vault. In the first place, the ribs strengthen the vault just where it is weakest, viz., at the arrises or groins. Secondly, the groined vault is a single homogeneous fabric; and if it fails anywhere, the whole collapses. But a quadripartite cross-ribbed vault really consists of four independent vaults or cells; and if one gives way, it does not involve the stability of the others. Thirdly, a groined vault, if the mortar is good, is practically a solid block of concrete; and cannot "give" much in case of settlement of some of its supports. But the other vault rests in a large measure on the diagonal arches; and if they either sink or are thrust up, the web of the cells follows their movements. In the choir of Troyes cathedral, built on inadequate foundations of gravel and marl, the vaults of 1214 are distorted in every direction, yet have stood safe for seven centuries; so also in the collegiate church of St. Quentin. Fourthly, if it be desired, the web of one or more of the cells of the vault can be taken out and replaced by a new one, without pulling down all the other cells. If a vault was built in Early Gothic days, the window in each bay might be a narrow lancet; if this did not give sufficient light, one of the cells could be reconstructed so as to slope upwards, and there would then be room for a large window; the vaults in the southern chapels of Chichester nave have been dealt

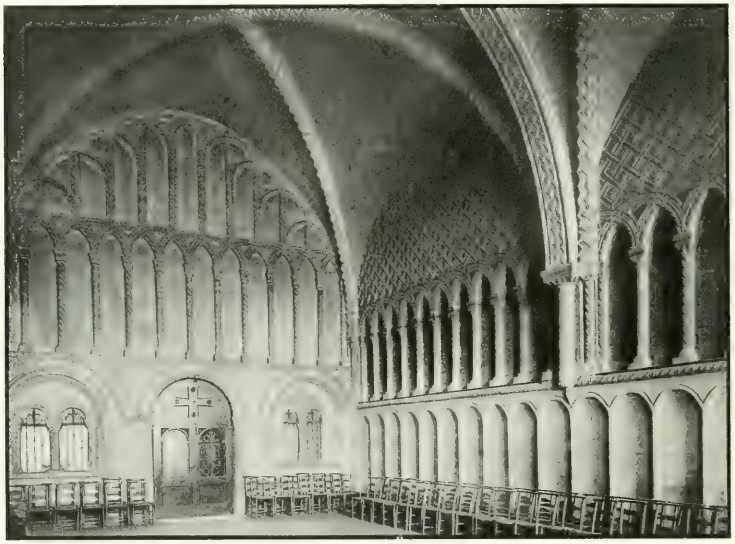


Durham: South Transept



Durham: East Bays of Nave

with in this fashion (409) ; it will be seen too that in Winchester nave the ridges of the side cells run uphill to get more headway for the clerestory windows (382). Of course, if the normal curve of the ribs is interfered with, that of the surface of the web will be interfered with also ; and it will no longer be regularly cylindrical as it ought to be. But unless the rib-curves are tampered with to a very large extent, no one but an expert notices anything wrong. Much use was made of this flexibility of cross-ribbed vault construction ; *e.g.*, if vaulting on either side of a clerestory window were allowed to retain its normal curves, it would project across the windows,

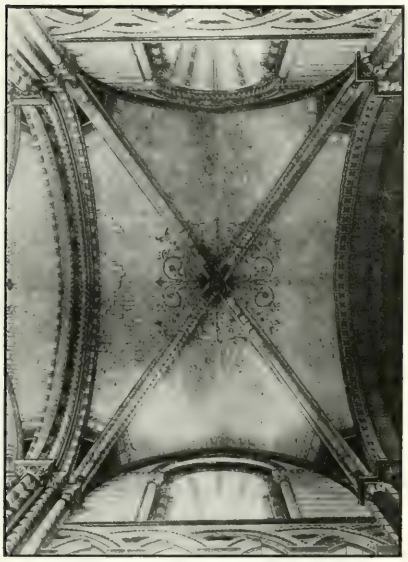


F. S. Bristol Chapter House

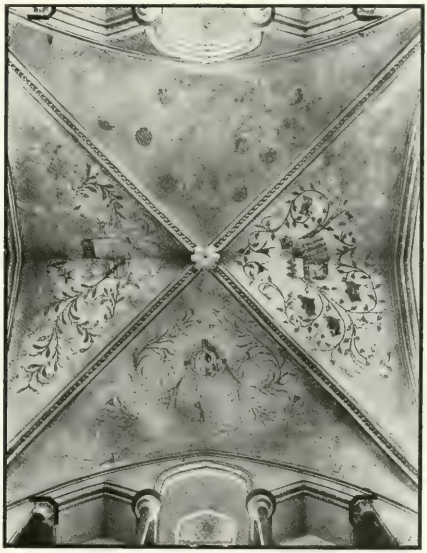
and the lighting would be seriously impaired. It was therefore usual to pinch back, as it were, these vaults at their spring ; producing the irregular surfaces termed "*plough-share vaulting*" ; this is well seen in Salisbury cathedral (752), Lincoln minster (585), Bristol cathedral (399), and in diagram 293.3. Then, fifthly, it became easy to make the cells of a vault-bay vary in area and shape. It was only necessary to move the point of intersection, and bays of any shape whatever could be covered with cross-ribbed vaults ; *e.g.*, at Westminster (302, 314). It was found equally unnecessary to adhere to the normal number of four cross-ribs ; in the aisles of Lincoln choir each bay of the vaulting contains five ribs ; in the central transept each bay contains six ; in the nave each bay has twelve ; in Exeter nave each

has twenty; in each case excluding the eight outer ribs which bound the bay. Thus the cross-ribbed vault is very elastic, lending itself to all possible applications. Finally, it would be very difficult to build a groined vault in ashlar; where it was desired, as in the Île de France and Picardy, to use ashlar, it became necessary to employ ribs. It is probable that this consideration had very much to do with the early employment of vaulting ribs in those districts.

Not much has been said yet of the outer arches or ribs. If the high vault of a nave be examined, it will be seen that the vault springs to the north and south from



F. B. St. Cross: West Bay of Chancel



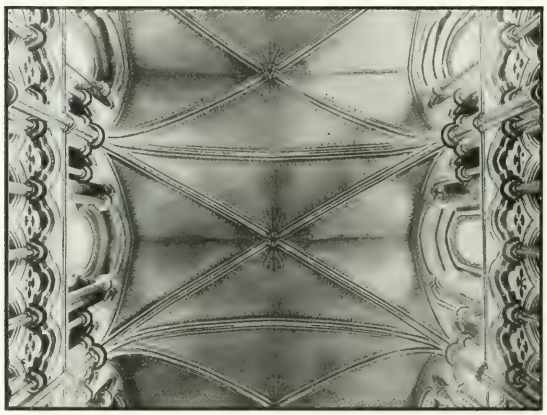
F. B. Boxgrove, Sussex

the clerestory walls; but if it is a good example of a Gothic vault, each end of it will be found to rest on a small arch, called a "wall-arch" (*formeret*); *e.g.*, St. Cross, Winchester, and Boxgrove priory. Really the ends of the vault rest almost wholly on the solid wall; but the eye always desiderates a demarcation between load and support, and this is provided by the wall-arch. Being little more than decorative, it is usually only half as thick as the diagonal arches, and is bonded but a short distance into the wall; see diagram on p. 369.

In the next place, at right angles to the clerestory walls are *transverse arches* spanning the nave. When the groined vault was in vogue, these arches had to be

very massive; but in a cross-ribbed vault much of the weight is taken off them by the diagonal arches; in fact the two sets of arches have just about equal loads to carry. When this was realised, the transverse arches were no longer made more massive than the diagonals, but of the same section. A survival of the old tradition is seen in the transverse arches of the choir of St. Cross, Winchester, which are very massive (299), and at Boxgrove (304); some few years later diagonal and transverse arches were built in the aisle of the western bays of Worcester nave without any difference of section; *cf.* Beverley (300) and Southwark (290).

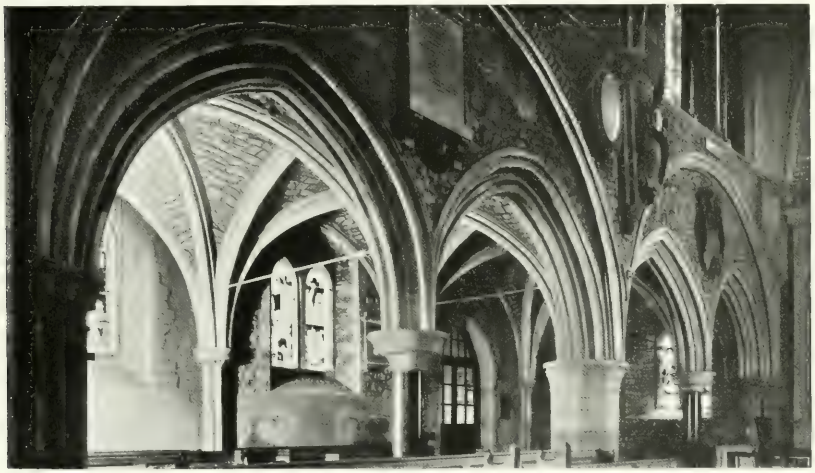
Another mark of distinction between early and later ribs is that the latter are constructed of much fewer blocks or *voussoirs*. In the earliest vaults, *e.g.*, Peterborough aisle (296), the voussoirs are small and numerous; but it was seen that a stronger rib could be obtained by the use of long blocks; so that while in the presbytery of Westminster abbey *c.* 1255 there are eighteen or nineteen voussoirs independent of the solid springer of each transverse rib, the nave, *c.* 1490, has only about half that number (305).



F. E. Beverley Minster: Choir

In a normal quadripartite cross-ribbed vault, at least three ribs spring from the capital of each vaulting shaft. In the early vaults, *e.g.*, Lessay abbey (296) and the crossing of Beverley (317), the voussoirs of these ribs are all independent, and all their joints are normal to the curve of the rib, except only the bottom voussoir, which is *skewbacked*; *i.e.*, its base is horizontal, but its top is on the slope. But where the ribs were broad and the capital was small, it was difficult to find room for all three ribs side by side, and so it became usual to build the lower courses solid. Thus in Rievaulx chancel (748) the four lower courses of the ribs are built solid; and in Southwark chancel (307) the seven bottom courses. In the Westminster presbytery (305) the seven bottom courses are composed of solid springers; above which the ribs of the vault radiate independently; in addition nine courses of the web are also laid in horizontal courses. It should be noticed also that in all the above vaults the solid lower courses are bonded into the wall behind; this enormously increases the stability of the lower portion of a vault; and it is because of the bonding of the solid springers that

these have often survived, as at Rievaulx, when all the upper portions of the vault have perished. In contrast to the three springers of Lessay (296), the ribs of the porch-vault of Woolpit church, Suffolk (338), are seen coalescing as they pass downwards to the capital; a pretty method, common in late work, is seen in the tower-vault of Minster Lovell, Oxon., of reducing the number of ribs descending to the capital (338). *Tas de charge* seems to have been first employed by the Cistercians in Byland abbey, Yorkshire, *c.* 1170; it occurs in Glastonbury abbey in 1186; in France it is said not to occur till the building of the choir of Soissons cathedral, completed in 1212, and Notre Dame, Paris, completed



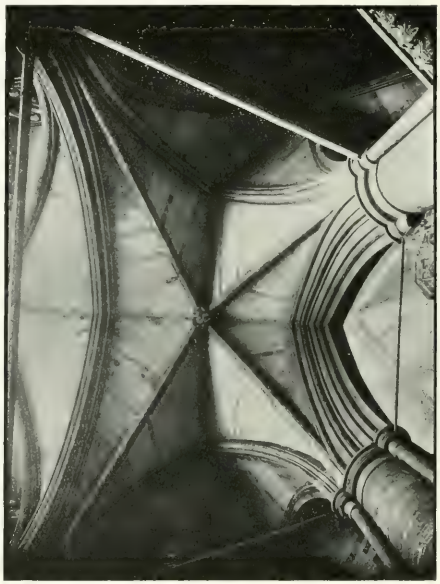
W. H. F. St. Thomas, Portsmouth

eight years later. The invention of *tas de charge* was a valuable improvement in construction. First, especially when the lowest course was solid, it was easier, when working the blocks on the bench, to get the curves of the molded ribs correct, so that the ribs should disengage themselves properly.[1] Secondly, in a group of ribs constructed in *tas de charge* the effect is to continue the pier or vaulting shaft upwards as far as the skewback; what is seen at Westminster is really a shaft in two portions; the lower portion is vertical; the upper portion consists of seven blocks each projecting beyond the block beneath it; *i.e.*, the upper portion is

[1] That the solid springer was worked on the bench, and was not put up in block and then shaped, appears from the fact that blocks of solid springers have been found covered with incised lines and curves shewing the mason how far back he was to cut the block. See Professor Willis' paper on *Vaulting*, 10, 11, 12.

corbelled out; the two portions are separated by the capital and abacus of the shaft (305). The advantages of this are considerable. In the first place the arcuated portion of the ribs does not commence at the spring of the ribs, but consists only of those courses, viz., the upper ones, which have radiating joints. The lower courses, not being portions of an arch, can therefore be built with much less centering, which is a great economy. Moreover, only the upper courses form parts of arches, and only these, therefore, have lateral thrusts; it may happen that not more

D. W. Westminster: St. Edmund's Chapel

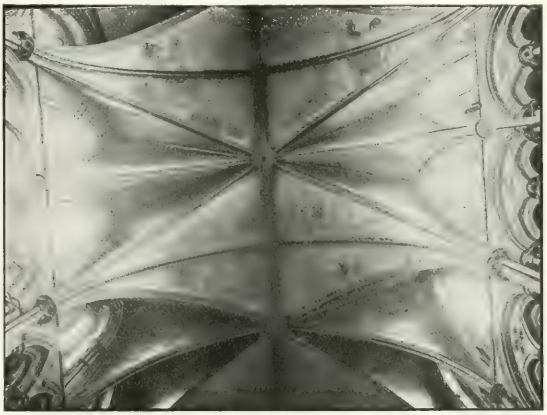


D. W. Westminster: Procession Path

than half of a vaulting arch is constructed with radiating joints; in such a case the lateral thrusts are diminished by half. Again, owing to the lower courses being built with horizontal beds, the lateral thrusts of the arch proper are forced down much more vertically, and less abutment is required. As time went on, these properties of the solid springer were more and more appreciated, and more and more height was given to the non-arcuated courses, especially in fan vaulting, where the *tas de charge* is of very large dimensions[1] (360). Indeed, in Henry the Seventh's chapel at Westminster the wall-piers are built without any buttresses, reliance being placed

[1] Such a vault may be described as a segmental tunnel vault resting on corbels.

largely on *tas de charge*.[1] Few factors of mediæval building construction had so great a value as the solid springer; it was used more and more in late work, and was indeed indispensable in complex vaults, where room had to be found on a single abacus for the springers of ten, twelve, thirteen, or more ribs; *e.g.*, in the high vault of the nave of St. George's, Windsor, where from each vaulting shaft spring fifteen ribs (346).



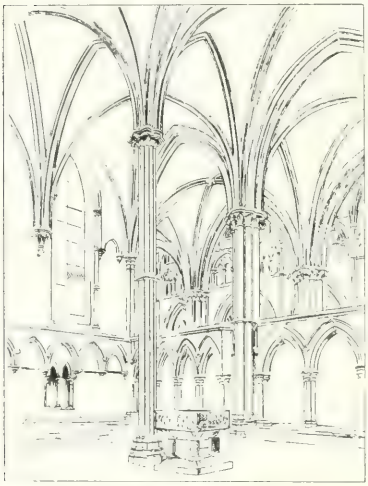
Lincoln: Central Transept

The solid springer met the difficulties which occur at the foot of the ribs. But there was another difficulty at their apex. Even the simplest vault—the four-celled—had two arches intersecting at its apex. In some eleventh-century work one of these diagonal arches was built complete, and then the second arch was built in two halves butting against either side of the first arch at the point of intersection. The next step was to provide the two arches with one common block at the apex, and this block was presently shaped with four shoulders or projections to receive the four ribs built up to it. Later these shoulders were considerably lengthened; thus adding considerably to its weight (285). This block, common to four or more ribs, is termed a *keystone* or *boss*. At first it was no larger than the voussoirs of the ribs; but it soon grew larger; its

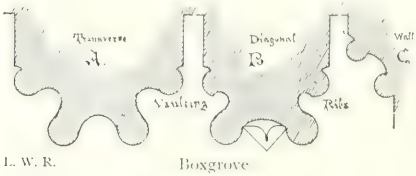
Lincoln: South-east Transept

[1] These wall-piers are, however, heavily weighted with pinnacles, and in section the vault is a pointed arch (366).

growth in importance is well seen in the vault, *c.* 1130, of the aisles of Southwell nave. There was a distinct advantage in making it large and heavy; for it weighted the ribs at their apex and prevented them from rising. The weight of the boss was still further increased by prolonging it downwards; when so prolonged, it is termed a pendant. In late vaulting the pendants often reached large dimensions; beautiful examples are seen in the lierne vault of Oxford cathedral (311) and in the fan vault of Henry the Seventh's chapel, Westminster (367); the latter are some 8 ft. long. Some of the bosses weigh 2 tons or upwards; the bosses on Exeter cathedral vary up to a diameter of 3 ft. Sometimes, to shew their ingenuity, the builders omitted the bosses, and the various ribs were made to "mitre" as accurately as in fine cabinetwork; *e.g.*, in the south transept of Gloucester (383). Sometimes a hole was pierced through the boss for a chain, from which might depend a coronal of lights. In the nave of Norwich cathedral, about midway between the west door and the ancient Rood loft, now gone, is a hole instead of a boss. The Sacrists' Rolls of Norwich have charges for letting a man down from the roof, habited as an angel, to cense the Rood. Similar ceremonies took place at Dunkirk,[1] and in St. Paul's cathedral, London. The latter ceremony is described in Lambard's *Topographical Dictionary*: "I myself, being a child, once saw in Poule's church at London, at a feast of Whitsontide, wheare the comyng down of the Holy Gost was set forth by a white pigeon that was let to fly out of a hole that is yet to be seen in the mydst of the roof of the great ile, and by a great censer, which, descending out of the same place almost to the very ground, was swinged up and down at such a length that it reached at one swepe almost to the west gate of the church and with the other to the queer stairs of the same, breathing out over the whole church and companie a most pleasant perfume of such sweet things as burned therein." The masons enjoyed themselves amazingly over the bosses, though the work in the finest of them—



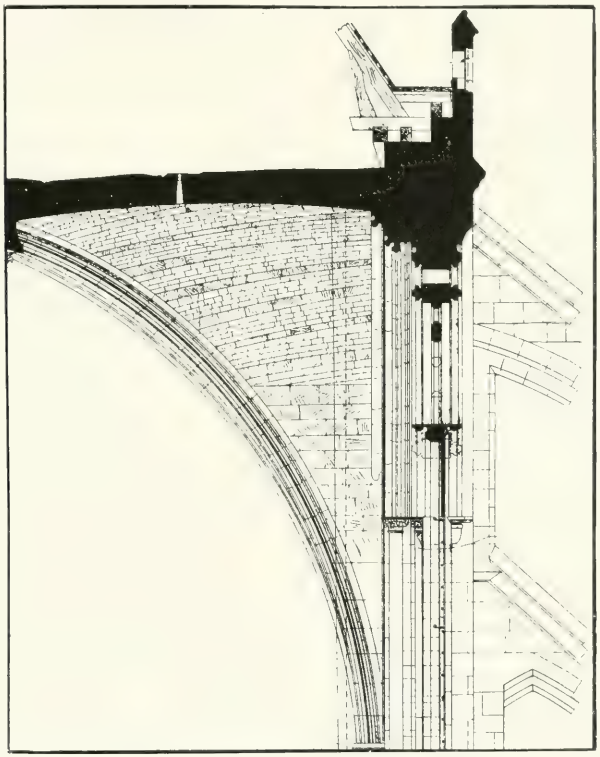
M. E. A. Lincoln: Morning Chapel



L. W. R. Boxgrove

[1] See fourth series of Ellis' *Letters Illustrative of English History*.

those of the high vaults—cannot be seen without the help of binoculars, which our fathers did not possess.[1] In Exeter cathedral there are no less than 573 bosses, great and small, including those beneath the Choir screen.[2] The beautiful series of bosses in the choir of Ottery St. Mary also deserve notice. Descriptions have been published of 328 bosses in Norwich cathedral; other fine series



S. V. Westminster Abbey: Presbytery

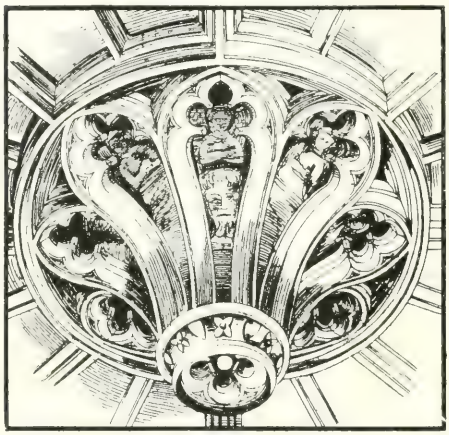
are to be seen in the cloisters.[3] The cloisters of Worcester also preserve very

[1] On a bright day bosses may be studied by placing a mirror on its back flat on the pavement. The lovely foliated bosses of the Gloucester Lady chapel are well seen from the eastern chapel of the triforium chamber (350).

[2] For description and illustrations of these see Prideaux and Shafto's *Bosses and Corbels of Exeter Cathedral*, Exeter, 1910.

[3] See Dr Goulburn's *Ancient Sculptures and History of Norwich Cathedral* (Norwich, 1876).

interesting series of carved bosses; in the north walk the great boss of the central bay has a representation of the Virgin and Child; in all the bays to east and west are carved angels with gaze turned to the carving in the central bay; so that this north walk is a kind of open-air Lady chapel; the illustration shews the Coronation of the Virgin (337). The early bosses are most often foliated; in the Exeter bosses lovely naturalistic foliage abounds (862); in the high vault of Westminster, *c.* 1270, is an early example of this work, consisting of a wreath of roses. Still naturalistic, with its berries, but with foliage already beginning to undulate, is the boss of the reredos of Beverley minster, which was paid for in 1334; yet more undulatory, but still with naturalistic survivals, are the other two examples from the same reredos, both remarkable examples of undercutting (310). In late work sculptured representations are common; sometimes the story of the Old Testament, or of the New, or of the local saint or patron. In Tewkesbury nave (43) the central bosses, beginning at the west end, represent: (1) the Nativity; (2) the Shepherds; (3) the Magi journeying; (4) the Magi in adoration; (5) the finding of Christ in the Temple; (6) the Triumphal Entry into Jerusalem; (7) the Last Supper, in which the Blessed Virgin is represented at the Table; (8) the Betrayal; (9) the Flagellation; (10) the Crucifixion; (11) the Resurrection; (12) the Ascension; (13) the Day of Pentecost; (14) the Coronation of the Virgin; (15) the Last Judgment: the other bosses contain angels bearing every known kind of instrument of music, alternating with angels censing or bearing emblems of the Passion.[1] Sometimes, as in the misericords,[2] the subjects are emblematic. On a boss in St. Paul's chapel, Exeter, is represented the Crucified, with Mary and John (308). In Chester Lady chapel is a representation of the Trinity; in the foreground is Christ Crucified; into His ear whispers the Holy Spirit, in the form of a dove; behind is the Father; on either hand are censing angels (309); on another boss is shewn the Virgin and Child with censing angels. On a boss in the chantry chapel of Corpus Christi in Beverley parish church two draped personages bear up a naked figure, symbol of a Christian soul (309). Beneath the canopy of the Percy tomb in Beverley minster four angels look up through the canopy to the Christ above,



G. C. W. Nottingham Porch, Bury St. Edmund's

[1] Massé's *Tewkesbury Abbey*, 42.

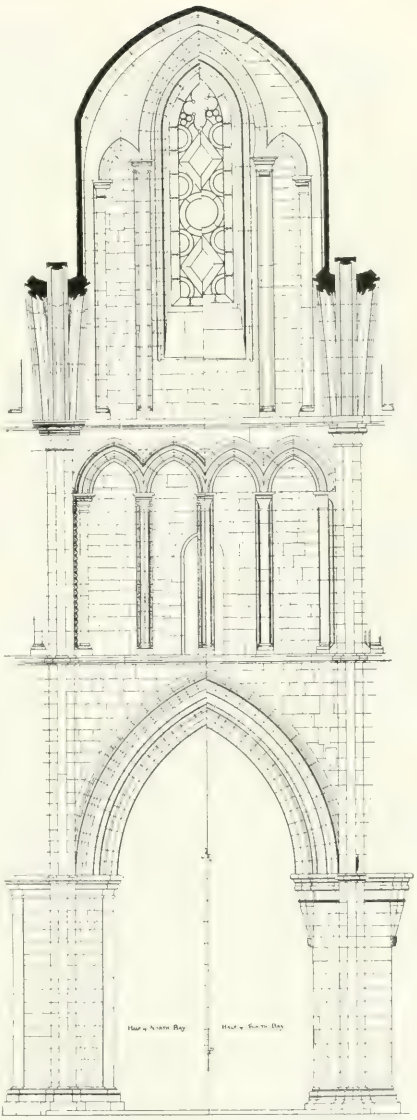
[2] See the writer's *Misericords*, *passim*.

in whose lap is a tiny nude figure, the soul of Lady Percy (308). In the cloister of Lincoln minster is a remarkable series of wooden bosses (309). Or the donor of a vault writes his name on it in the form of a rebus, as in the westernmost bay of the high vault of the nave of Norwich, where the representation of a hart lying down tells that the vault was built by Bishop Lyhart. Or he puts his mark on the work by inserting his coat of arms; *e.g.*, those of Cardinals Beaufort and Waynflete in the nave vault of Winchester. Or he shews that one particular bay was not built till the reign of Henry VII. by crowding the bosses of this bay with Tudor badges, as in two central bays of Westminster nave.[1] Over the High altar and over the shrine of the patron of the church were usually put up bosses of special importance; and by means of these we may sometimes recover the position of the High altar where it has been changed, or the site of a destroyed shrine, *e.g.*, that of St. Etheldreda at Ely.[2]

Exceptionally elongated bosses, such as those in Henry the Seventh's chapel and Oxford cathedral, mentioned above, are termed *pendants*. A charming small example, *c.* 1340, remains in the vault of the Lady chapel of Patrington church, Yorkshire; it is hollow on the eastern side, perhaps to hold a light (70). One is illustrated from the Nottingham porch at Bury St. Edmund's (306).

[1] See the writer's *Westminster Abbey*, p. 126.

[2] In the chancel of Bristol cathedral the vaulting is cusped; but the cusping ends against the last transverse arch over what was the back of the original High altar, to which position the modern High altar has been recently restored.



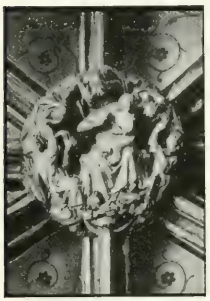
Southwark Cathedral: Presbytery

Beverley Minster.
Exeter: St. Paul's Chapel.

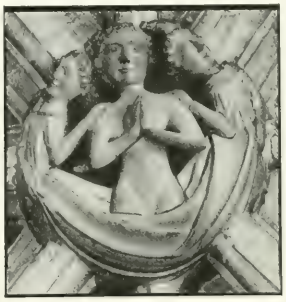
A boss, though the chief keystone in the ribbing of a vault, is but one of the keystones; every voussoir in a rib keys the rib, and is a keystone. And just as the top keystone can be elongated into a boss or pendant, so can any other voussoir. Curious effects can be gained, in this way. In the Divinity School at Oxford (343) the central keystone of each transverse arch was not elongated into a pendant; the two voussoirs so treated are distant from the walls about one-fourth of the width of the building; thus the effect is, and was meant to be, that of a hall divided into nave and aisles so far as the vault goes; this device was repeated in the choir of Oxford cathedral (347) and in Henry the Seventh's chapel, Westminster (367). Diminutive arches are also sometimes built up, one end resting on the knob of the pendant, sadly puzzling the unwary; for the arches seem to be supported by the pendants, and the pendants by nothing at all (355). Like the solid springers, the bosses were carved on the bench, and on their backs may sometimes be seen lines and curves incised for the direction of the mason; *e.g.*, at Westminster and Ely.

The point at which aisle vaults spring does not vary much; the chief thing to be

borne in mind was that they should not obstruct the aisle windows. But the stability of high vaults was less easy to assure; and to secure this, the builders sometimes sprang the high vault at a very low level, regardless of the fact that this both seriously interfered with the clerestory lighting and produced a depressing and

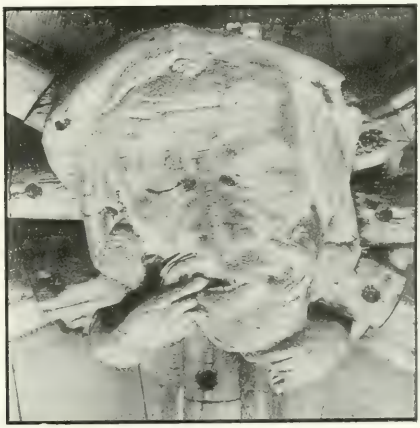


Chester Lady Chapel



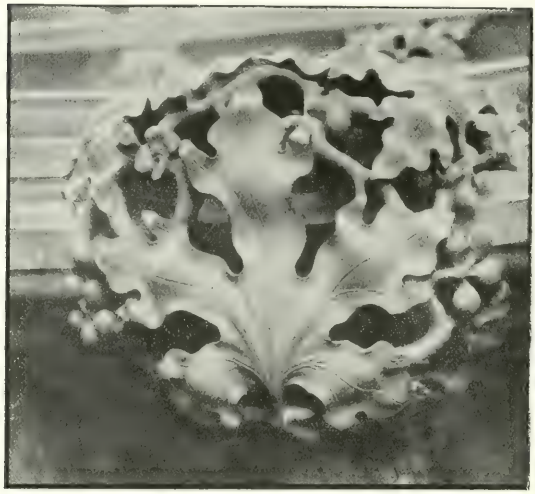
St. Mary Beverley

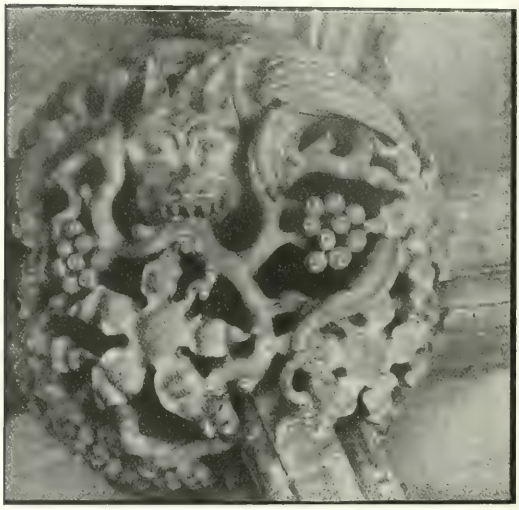
Chester Lady Chapel



S. S. Lincoln Cloister

gloomy interior; as at Tewkesbury, where the high vault of the nave springs from the abacus of the piers (43), and Gloucester nave, where it springs from the sill of the triforium (758). The two most common arrangements were to spring the high vault either midway in the triforium, *e.g.*, Pershore (766), or from the sill of the clerestory (769). A rarer, but far nobler, arrangement was to spring it at about a third





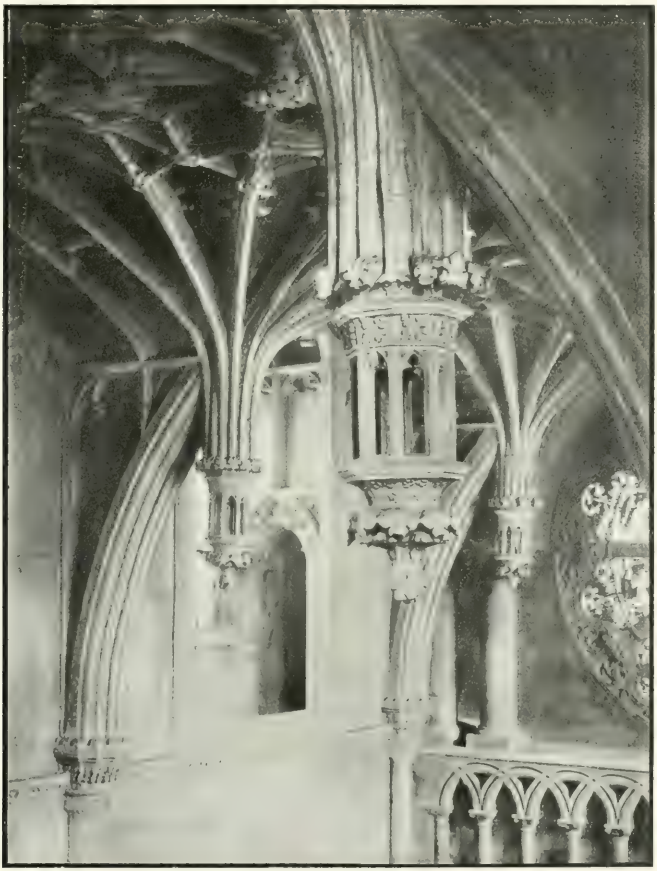
F. H. C. Beverley Minster

of the height of the clerestory; *e.g.*, at Beverley (776) and Westminster (305); and higher still in St. George's, Windsor; this freed the clerestory windows from obstruction, and lighted up not only the nave but the high vault itself.

In the earliest Romanesque architecture all the arches were rectangular and unmolded,[1] and the vault ribs naturally were designed in the same fashion; *e.g.*, in the nave of S. Ambrogio, Milan, and the crypt of Gloucester cathedral. But by the time the cross-ribbed vault came into use in Durham choir, viz., in 1093, it had become usual to mold the pier-arches, and the vault ribs naturally conformed to their design (297). At first, however, the square outline of the earlier type of arch and rib was preserved; the moldings being either soffit or face members; *i.e.*, cut either on the underside or on the face of the voussoirs. Later on, both in arch and rib the voussoirs were chamfered, *i.e.*, made oblique in section, before they were molded; in such a case the moldings are on the *chamfer planes*. As we have seen above, it was often

[1] It was the fashion in the West of England to leave them square-edged; *e.g.*, at Leominster, which is probably not earlier than 1130 (269), and St. John's, Chester (742): *cf.* Lessay (296).

difficult to find room on the supporting abacus for a group of ribs; these could be accommodated more easily if they were chamfered; and this may be one reason why the latter form gained the preference.



W. F. Oxford Cathedral: Presbytery

As has been pointed out above, our English masons were practically unanimous in favour of the level-ridged vault. If semicircular arches only were employed, such a vault would be impossible; the diagonals of a square or oblong are

longer than its sides, and if semicircular arches only are employed, the vault will be highly domical, as in the diagram (291.5). Various methods of coping with the difficulty might be adopted. First, let it be a square bay (313.5) that is to be vaulted: here the diagonals AC, BD are longer than the outer arches AB, BC, CD, DA. One method would be to erect semicircular arches (1) on the sides of the bay, and on the diagonals arches less than semicircles, *i.e.*, segmental arches (2). Another method would be to erect a semicircle (4) over each diagonal, and a stilted semicircle (3) over each side. More often the narrow arch was stilted and the wide arch at the same time made segmental. Whichever method was adopted, level ridges could be obtained. Secondly, take the case of an oblong bay (9 or 13): here the difficulty is greater still, for the spaces to be bridged are not of two but of three different lengths. One way out of the difficulty would be to erect a semicircle (7) over each of the long sides, AB, DC; a segmental arch (8) over each of the diagonals AC, BD, and a stilted semicircle (6) over each of the short sides AD, BC. A second method might be to employ nothing but pointed arches; acutely pointed arches (10) over AD, BC, less acutely pointed arches (11) over AB, DC, and obtusely pointed arches (12) over AC, BD; in the Wells vaults all the three sets of arches are pointed. The favourite method, however, seen in Beverley choir (300) was to retain the semicircular arch for the diagonals, and to point the wall-arches acutely and the transverse arches less acutely.[1] Of pointed transverse arches in a high vault the earliest in England are those which span the nave of Durham, built in the years 1128 to 1133 (746). Later on, as the masons gained experience and courage, they did not confine themselves in vaulting to these two forms of arch; but adopted any form which had practical advantages. For a vault pointed in section has its disadvantage that being so lofty, if the external roof is built with tie-beams, the whole length of the side walls on which they rest has to be high up; but if the vault could be built flatter in section, then a considerable reduction in the amount of masonry could be effected; a good example of a flattened vault is seen in the Lady chapel of Ely, *c.* 1330. The flattening was brought about by employing an arch of less acute section than the pointed or the semicircular arch; *e.g.*, the four-centered arch.

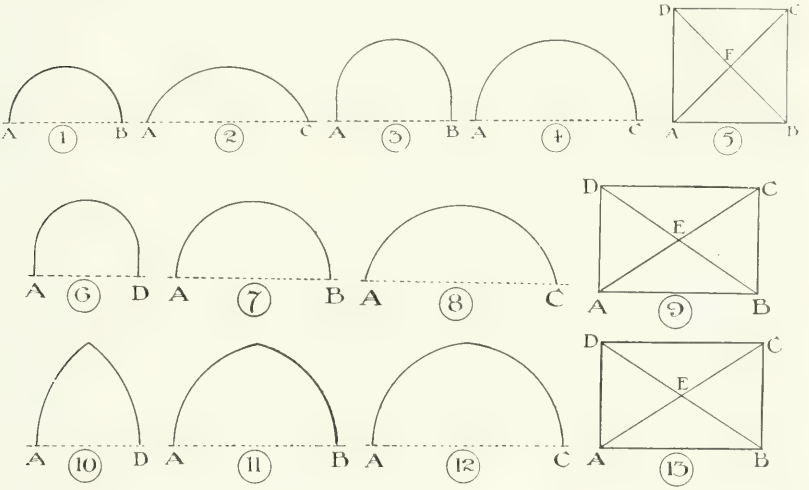
In some cases the vaults with their abutment were first built, and then the timber roof was put on;[2] there is documentary evidence that the roof of the Lady chapel of Westminster abbey, which was consecrated in 1220, was taken off in 1256 that the chapel might be vaulted. On the other hand, where there was a substantial timber roof and it was afterwards determined to put up a vault, this would be built beneath it, leaving the roof untouched; *e.g.*, in Winchester nave the roof of

[1] It should be added that as a matter of fact few of the arches of vaults are true in curve. Some have collapsed at various points, *e.g.*, Durham nave; others were drawn in at the foot for various reasons, making them four-centered.

[2] The process is shewn in the mediæval drawing reproduced in Choisy's *Histoire de l'Architecture*, ii. 338.

the nave was put up *c.* 1200, but the vault not till *c.* 1400; some of the Norman tie beams still exist in the roof of nave and transept (796). In the western bays of the nave of Westminster abbey, first the clerestory wall and windows were completed; then the roof was put up, 1474-1478; then flying buttresses were built, 1477-1482; then the high vaults were inserted, 1482-1490, except in two bays, which seem not to have been vaulted till 1490-1498.[1]

The cross-ribbed vault is the *primum mobile* of Gothic architecture, and much ink has been spilt in asserting the claims to priority of its invention in this or that nation. Several examples of early vaults of this type occur in Italy; but here, as



W. E.

elsewhere, it has to be borne in mind that the vaults of a church being so often constructed later than the roofs, it by no means follows that the vaults were put up when the church was built. On the west front of S. Flaviano, Montefiascone, is an inserted block with the date 1032; the aisles of this church have a vault whose diagonal ribs are rectangular, about 10 in. broad at the base; in one bay, however, the diagonal ribs consist of a rough "torus" or roll. In the cathedral of Aversa, which was completed in 1078, the ambulatory has diagonals of square section about 20 in. broad at the base. In an early church at Rivolta d'Adda two of the bays of the aisled nave have square diagonals, very slightly pointed, and each bay is domical; the ribs are about 20 in. broad at the top. In all these churches the ribs are close

[1] See the writer's *Westminster Abbey*, 122.

copies of the visible diagonal ribs of the vaults of ancient Rome.[1] S. Nazzaro Maggiore, Milan, seems to have been built immediately after a fire in 1073, and to have been planned from the foundations for a ribbed vault.[2] The most remarkable of the early Romanesque vaults of Italy are those of S. Ambrogio, Milan; these cover the nave, which is of wide span; the diagonals are square; this vault may be *c.* 1096. In the South of France the broad crypt of St. Gilles is spanned by a broad cross-ribbed vault, which cannot be later than 1145. In the Île de France and

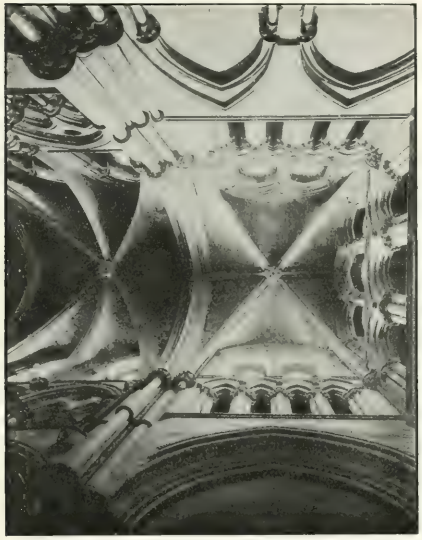
D. W. Westminster: the Presbytery

Picardy cross-ribbed vaults were put up by Abbot Suger in the years 1140 to 1144; some of these vaults covered the nave as well as the aisles; it is impossible that vaults of such highly perfected structure, much less vaults over a broad and lofty nave, could have been executed without a series of experiments in rib vaulting extending over a considerable period; no very early vaults, however, in these districts have yet been authenticated; the vaulted naves of Bury and Bellefontaine are held

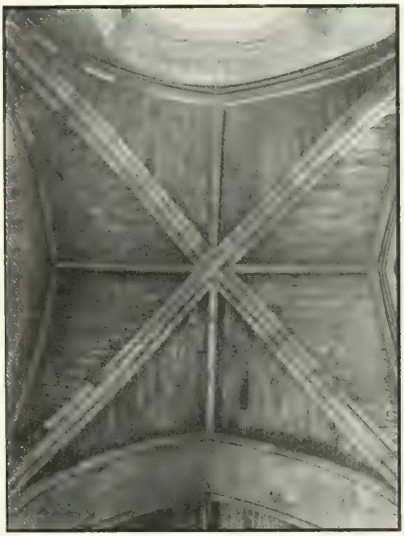
[1] Rivoira's *Lombardic Architecture*, i. 210, 222, 224, 248.

[2] A. K. Porter in *Mediæval Architecture*, i. 203. Comte Robert de Lasteyrie throws doubts on the above Italian examples; see his *L'architecture religieuse en France à l'époque romane*, Paris, 1912, p. 260, which is cited later on as R. de Lasteyrie's *Architecture romane*. But see p. 384.

to be *c.* 1125; the ambulatory of Morienval is probably not earlier than 1120 or 1130; from the plan of the piers it would appear that *c.* 1130 the nave of St. Etienne, Beauvais, was set out for a vault in oblong bays. M. Camille Enlart points out that all the early ribbed vaults, which are numerous, in these districts, to which some such date as 1120 has been assigned, are clumsy in construction and can only have been in use for a short time.[1] It is likely that the cross-ribbed vault was employed at an earlier date in Normandy than in the Île de France and Picardy. It was pointed out by the writer in 1905[2] that the choir, transepts, and nave of Lessay abbey,



F. B. Lincoln: South-east Transept



J. B. Ripon Transept

Manche, have high ribbed vaults which are presumably *c.* 1120–*c.* 1130 (296). In 1908 Lessay was visited by the *Société francaise d'archéologie*, and in the *Congress Guide* M. Lefèvre-Pontalis dates these vaults *c.* 1125–*c.* 1150. Since, however, they are high vaults, and are set out in oblongs (which are more difficult to vault than square bays), there must have been previous experimentation in Normandy with an easier form of cross-ribbed vaulting, viz., in aisles vaulted in square bays; if so, the

[1] See Lefèvre-Pontalis' *L'architecture religieuse dans l'ancien diocèse de Soissons au XIe et au XIIe siècle*; Enlart's *Monuments religieux de l'architecture romane et de transition dans la région picarde*; Dehio and Van Bezold's *Die Kirchliche Baukunst des Abendlandes*, vol. ii. c. ii.; and R. de Lasteyrie's *Architecture romane*, 264.

[2] *Gothic Architecture in England*, 316.

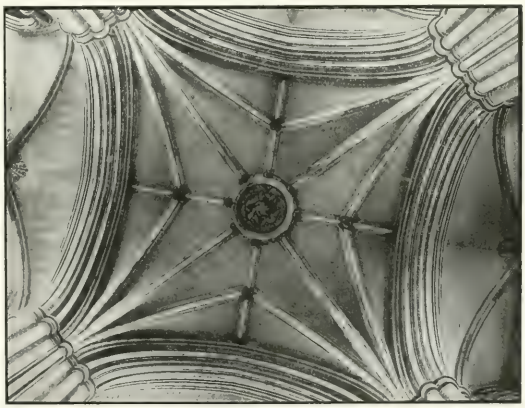
builders of Normandy must have found out how to construct cross-ribbed vaults at any rate early in the first quarter of the twelfth century. In England it may be taken as proven that we had cross-ribbed vaults so early as the last decade of the eleventh century. In the apse of the south transept of Tewkesbury abbey are radiating ribs (59); this abbey was founded in 1087, the choir was ready for use in 1102; the transept can be little, if at all later. In the apsidal chapel of the south transept of Christchurch, Hants, and in the apses of the crypts beneath the two transepts also are vaults with radiating ribs; the probability is that Christchurch was begun before Durham cathedral. In 1093 was commenced the chancel of Durham cathedral; its aisles are set out in oblongs and have cross-ribbed vaults. In 1881 Canon Greenwell shewed[1] that the high vault of the nave was built between 1128 and 1133, and that the high vaults of the transepts are earlier still; while on the clerestory walls of the choir there are the marks of a high vault which was probably finished by 1104, but fell down in the thirteenth century. In the high vault of the nave the transverse arches are pointed; a remarkable feature at that early date; on the other hand some of the transverse arches are omitted (297). The high vaults at Lessay, like those of Durham nave and transepts, are an afterthought; but are of more advanced type than those of Durham, no transverse arches being omitted (370.1)

I. K. P. Malvern: Aisle of Chancel

It has been urged that the cross-ribbed vaults of Lombardy were not only the earliest, but were actually copied in Germany, France, and England. Between the Romanesque architecture of Lombardy and Germany there are undoubtedly some points in common, as there are to some extent between that of Lombardy and that of Normandy and England. In Germany the high vaults put up early in the twelfth century in the cathedrals of Worms and Mayence strongly resemble those of S. Am-

[1] Architectural evidence in support of Canon Greenwell's chronology was adduced by Mr J. Bilson in the *Journal of the R.I.B.A.*, 11th and 20th March 1899.

brogio, Milan; in both two bays of the ground story being represented by one bay of the vault, and the large bay thus obtained is square or nearly so. But in French and English Romanesque this latter peculiarity is not found;[1] when a cross-ribbed vault in England is built over coupled bays, it is divided into six cells, not four. Evidently the German vault system is an independent development. In England the sexpartite vault hardly exists in Romanesque work.[2] It was not till 1175 that it was imported to Canterbury by William of Sens, and copied later in Lincoln minster and elsewhere (303). The normal type of cross-ribbed high vault in England, and that built in Normandy at Lessay, was one in which the bays were not coupled, and in which, therefore, the bays of the vault were pronounced oblongs. But it is hardly worth while to devote more time to the study of vault pedigrees. The fact is that all over Western Europe, in the last quarter of the eleventh century, the masons were experimenting with vaulting and finding solutions in abundance of the problem how to vault an aisled and clerestoried church; some employing domes, some barrel vaults, some groined vaults, some ribbed vaults; those who adopted the last employing them in Lombardy in one way, in Normandy in a second, in England in a third. There is too much genealogising in architectural literature. Some years ago a straw hat with a feather round it was to be seen on the heads of ladies in Chicago and New York. It may be maintained that the Chicago hat was copied from the New York hat, or that the New York hat was copied from the Chicago one; but it is also possible that neither was copied from the other, but both from a common source, Paris. And there is yet a fourth hypothesis, viz., that the two hats were invented independently: the combination of a straw hat and a feather having doubtless been invented over and over again in the long history of ladies' fashions.



F. B. Beverley Minster: the Crossing

[1] It occurs in Gothic vaults at Boxgrove and Portsmouth (301).

[2] Except in the little chancel of Tickencote church, Rutland.

CONSTRUCTION OF THE WEB OR FILLING IN OF THE CELLS OF A CROSS-RIBBED VAULT WITH RUBBLE OR ASHLAR

The groined, *i.e.*, unribbed, cross-vaults, were almost invariably built in undressed stone, *i.e.*, rubble.[1] And when diagonal ribs were introduced, it was natural that the cells of the vault should still be constructed in rubble; to have built them in dressed stone, *i.e.*, ashlar, would have been much more expensive. A web of rubble, however, would often be at least a foot thick; and its great weight involved extra thickness of walls, piers, and arches to support it. One method of lightening a rubble vault was to construct it in some light stone, *e.g.*, chalk, which has the additional advantage of being soft and easy to work. Best of all was an aqueous tufa, deposits of which, from some ancient petrifying springs, occur in Kent and Worcestershire; it has the additional merit of having a rough surface, giving a good hold to the mortar. The greater part of the vaults of Worcester cathedral are built of tufa; so also is the vault of Canterbury chancel. Owing to facility of execution and cheapness, rubble webs were long in favour in England; in Lincoln minster from 1192 to 1280 all the vaults are filled in with rubble. Late examples of rubble-filled vaults may be seen at Lichfield and Tewkesbury.

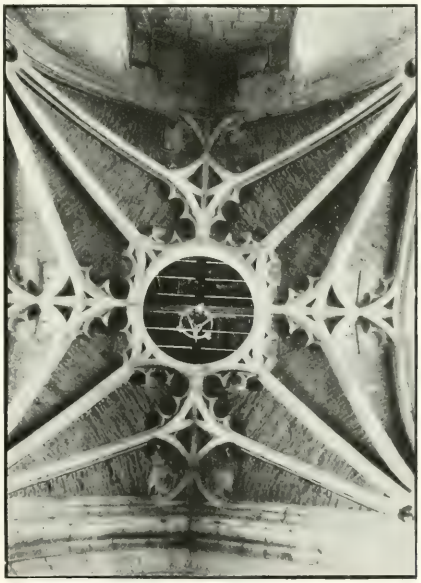
Vaults filled in with rough rubble were unsightly, and so the rubble was covered over with a smooth coat of plaster, which was afterwards decorated with painted scroll work and other designs, *e.g.*, at Boxgrove (299); in modern "restorations" the plaster has often been stripped off and the rough surface exposed; *e.g.*, in Lincoln minster by Mr Pearson (320).

In the Île de France and Picardy the masons adopted a method of filling in which gave a completely different turn to vault development; from the first, even in the early twelfth-century Gothic vaults, they abandoned rubble and filled in with ashlar. By so doing, they were able to reduce the weight of the vaulting by at least one half; instead of a web of rubble some 12 in. thick, they were able to have one of ashlar some 6 in. thick, and, later on, considerably less. Why the Gothic builders of France were so resolute to fill in with ashlar, while we were still satisfied with rubble, it is not easy to see. Perhaps it was that their monastic and cathedral churches were very much broader and loftier than ours, and the thrusts of their vaults were all the more difficult to stop; by reducing the weight of a vault, they reduced its thrust. Also a vault of half the weight would require far less substantial centering. At first, however, the weight of the vault was often actually increased by covering the ashlar web with a layer of concrete; this may have been to prevent

[1] Near Villers-Cotterets a Gallo-Roman hypocaust has been found with a groined vault filled in with ashlar; a few mediæval examples occur in France, especially in Anjou. See Choisy's *L'art de bâtir chez les Romains*, plates 18 and 19; and R. de Lasteyrie's *Architecture romane*, 258, note. To these perhaps may be added the vaults of the crypt in Oxford castle.

infiltration into the joints from leaky roofs, which would have been fatal. The later vaults dispensed with this layer of concrete; and especially where the vault was of flattish section, the upper surface of the web was sometimes chipped away; the effect of this in the vault of Henry the Seventh's chapel, Westminster, was to reduce the thickness of the web to less than five inches.

These webs of ashlar were built up in slightly arched [1] courses, the bottom course starting at the top of the *tas de charge*; the construction is well seen in Southwark choir (307). To obtain the arched form, a wooden centre for each course would be wanted; a short one at the bottom, and others successively longer as the ridge of the vault was neared. These could be used again in all other vaulting cells which were of the same dimensions. Two sets of centering were required, therefore, for the early and normal type of Gothic vault filled in with ashlar; one set for the construction of the ribs, the other for the segmental courses of ashlar blocks ("*voutains*")[2] of which the web was composed. When filled in, the web consisted of arch upon arch of voutains, supported at either end by ribs. Sometimes the ends of the course rested on the backs of the ribs; but in later work a groove was often cut in the sides of the ribs, *i.e.*, they were *rebated*, to receive the end-voutains; the latter was the better method, as it made each cell a separate entity, which would be unaffected by anything that might happen in the contiguous cells. In the diagram on p. 285 a rebated rib is shewn at 20, a non-rebated at 18; 19 is a wall rib; in 18 and 19 the centering of the web is shewn.



G. G. B. Morton Tower, Lincs.

Sometimes a circular aperture was left in the centre of a vaulting bay, the boss being omitted, *e.g.*, in the central tower of Malvern (379); there are three of these in the eastern transept of Durham; sometimes a hole was pierced through the web as at Lincoln (331); the object of the larger holes is to allow bells or

[1] When the web was composed of voussoirs of uniform width, as in the English method (p. 325), the courses would be nearly flat.

[2] Just as *voussoirs* are the blocks of an arch or rib, so *voutains* are the blocks of a vault web.

building materials to be hauled up. Small apertures for ropes, chains, etc., are very common; the vaults of Ottery St. Mary are riddled with them.[1]

The geographical distribution in England of these two types of vault in our Early Gothic churches is interesting and important. In the South of England vault cells filled in with *ashlar* occur at St. Cross, Winchester, *c.* 1165 (299); and at Chichester *c.* 1186 (749), and New Shoreham *c.* 1200. On the other hand all the Early Gothic vaults of the West of England, *e.g.*, Wells cathedral, employ *rubble*; as do those in the North of England, excepting Byland abbey, Yorkshire. The Western school was unacquainted with the work going on in the Île de France and Picardy; naturally, therefore, it remained faithful to the indigenous rubble vault. But the great school of Early Gothic in the Île de France from the very first eschewed rubble as a filling in; it employed coursed ashlar, and that as early as *c.* 1120. Taking into account the geographical situation of our early ashlar vaults—all, except Byland, in the neighbourhood of the Channel, and the fact that ashlar vaults were in use in the Île de France and Picardy nearly fifty years before they were employed in England, the conclusion is inevitable that the employment of ashlar instead of rubble in the webs of the vaults is due to French influence. As for Byland, it is hardly an exception; for it was a Cistercian abbey, and therefore in close touch with Burgundy.[2]

F. B. Lincoln Retro choir

VAULTS SQUARE ON PLAN

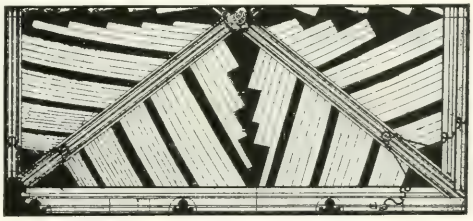
When an oblong space is to be vaulted, there occurs the difficulty that the two ends of the oblong are of one length, the two sides of another length, and the diagonals of a third. In the days when only the semicircular arch was employed, or its variants, the stilted semicircle and the segmental, this difficulty was felt so much

[1] See J. H. Maitland in *Transactions of Exeter Diocesan Society*, I. iv. 60.

[2] For other examples of quadripartite vaults illustrated see Temple church choir (18), the Lady chapels of Chichester (68), Bristol (75), and Salisbury (145), and Beverley nave (776).

that many builders set out their high vaults in such a way that the vaulting bays should be square or nearly so. Even when the high vault of Durham nave had been built, where the whole difficulty was solved by the use of the pointed arch, the superstition about the superiority of the square vault-bay survived here and there, and a great deal of trouble was taken to secure square bays in the high vaults and sometimes in the aisle vaults also. Even to the end of Gothic architecture the builders had a sneaking fondness for square bays; *e.g.*, in the high vault of Oxford cathedral, *c.* 1500, a slice is cut off from each end of each oblong bay and is ceiled with a segmental barrel vault; the remaining portion is square, and is ceiled with a lierne vault (344).

The favourite vault of the Romanesque school in Normandy was one in which the nave was vaulted in coupled bays and the aisles in single bays; thus to each bay of the nave there corresponded two bays of each aisle. The transverse arches which span the nave are supported by the major piers; the minor piers support an additional light transverse arch intermediate between the main transverse arches. This additional arch divides up two of the cells, and the vault-bay instead of being quadripartite, *i.e.*, with four cells, becomes *sexpartite*, with six cells. In the diagram 291.3, AB and CD are transverse arches and FG the new intermediate arch; there are six cells, and their six ridges spring from R, R, R, R, R, R, to E. BG, GD, AF, FC are wall-arches, beneath each of which would be a clerestory window. This type of vault was exported from Normandy to Paris and the neighbourhood, and was much employed at Notre Dame and elsewhere. In England its chief representatives are to be found in the choirs of Canterbury and Rochester, the transepts of Lincoln, and the chapel of the Nine Altars, Durham (303). In the aisles of the choir and transepts of Lincoln the vaulting has either five or four cells, *i.e.*, is quinquepartite or quadripartite; both, however, are but variants of the sexpartite high vaults; one rib or two ribs of the six being omitted according as there was lacking one support or two.[1]



T. M. L. Westminster Abbey: Half Bay of North Cloister

Here and there in Normandy a curious variant occurs; *e.g.*, at the Abbaye-aux-dames, Caen; the additional intermediate arch being made to carry a wall; the vault is really quadripartite, with two of the cells cut in half by the wall. It is

[1] In the nave of St. David's (748) the vaulting shafts are alternately triple and single; the triple to support transverse arches, the single to support an intermediate arch; so that sexpartite vaulting seems to have been intended, as also in the nave of Norwich cathedral.

generally regarded as a development from the sexpartite type; but being such an imperfect form, it may be that it is the earlier of the two.[1]

The next set of vaults is identical with the sexpartite, except that the additional arch is not present in the high vault. In this there is one large square bay in the nave vault corresponding to a pair of small square vaults in the two aisles. Examples on a large scale occur in S. Ambrogio, Milan, and Worms and Mayence cathedrals; in England we have two instances only; one is the priory church of Boxgrove, Sussex: this was an alien priory, dependent on the abbey of Lessay in Normandy, and therefore likely to be *au courant* with foreign ways; not only the chancel, but the nave, now in ruins, had this unusual form of vault (370); St. Thomas, Portsmouth, also was planned for a vault of this type (301).

In Italian Gothic, *e.g.*, in the vast church of S. Petronio, Bologna, it was common to vault the nave in great squares; and for every great square in the nave vault there was a great oblong in the aisle vault. The resultant is clumsy and ugly, as is most of the ecclesiastical Gothic of Italy.

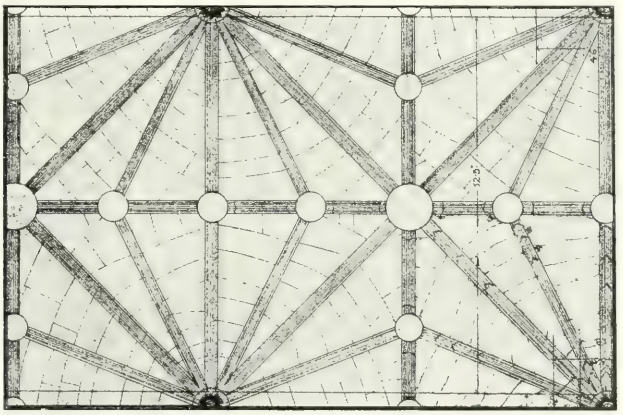
Abroad some large churches were built from the first without aisles; in others aisles were demolished and the space they had occupied was thrown into the nave; *e.g.*, Angers and Laval cathedrals. In either case the broad nave was usually vaulted in square bays.

FRENCH AND ENGLISH METHODS OF FILLING IN VAULT CELLS. RIDGE RIBS AND TIERCERONS

It has been shewn that the French had a start of nearly half a century in the employment of ashlar vaults. Not only so, but from the first they hit upon a method of construction more scientific than that which we adopted. To make this clear, we may take the plan of a single bay of a cross-ribbed vault; let it be a square vault of a nave (293.1). It rests on clerestory walls of which AD and BC are portions; it is bounded east and west by transverse arches DC, AB spanning the nave. There are wall-arches AFD and BGC; their apexes F and G are at a little distance above the clerestory windows. There are two diagonal arches DEB and CEA intersecting at the central boss E. The longitudinal ridge of the vault runs east and west, and is represented by the dotted line HEI; the transverse ridge runs north and south from above one clerestory window to the opposite one, and is represented by the dotted line FEG. There are four cells, AEB, BEC, CED, DEA, rising from A, B, C, D to the ridges EH, EG, EI, FE respectively. In each cell or compartment we shall have to build upwards to the above ridges. How is such a vault as the above to be built? The following is the procedure. We begin at each corner by building a few courses in *tas de charge*, *i.e.*, in the fashion of corbels, with hori-

[1] Illustrated in *Gothic Architecture in England*, 319.

zontal joints; these are shewn in solid black in diagram 293.1. From the top of each of these corbels, we erect by the aid of wooden centres the four outer arches, AB, BC, CD, DA, and the two inner arches, the diagonals AC, BD. How this looks in perspective is shewn on the left-hand side of diagram 291.1. The next thing is to bridge over the spaces from AE to BE, BE to CE, CE to DE, and DE to AE. We will try our hands first at the cell AED. We shall have to build upwards from A a wall curving inwardly till it reaches the ridge FE, and from D a similar wall rising to meet it at the same ridge FE. We will first construct the web of the half cell AEF. At its foot, in black, is the corbel AKJ, of which the upper surface KJ is *not* parallel to the ridge FE. It will be simpler if in this cell we employ planks, as is done in the high vaults of York minster,

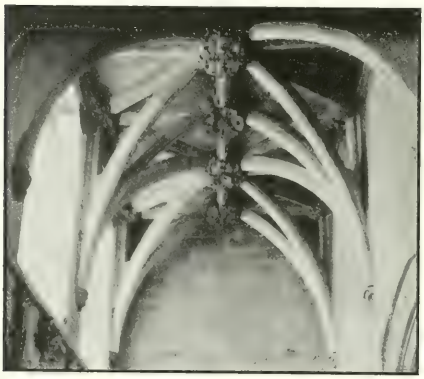


W. W. L. C. Norwich Cathedral: Cloister

and planks all of the same breadth. Given these planks, there are two ways of employing them. The simplest and easiest is shewn in diagram 325.2. The carpenter cuts off what lengths of plank he requires, sets 1, 1 on the top of the solid springer, 2, 2 on 1, 1, and so on till he reaches the ridge FE. The web of the half cell AEF is thus complete, the only defect being that two of the planks, 6 and 7, meet the ridge FE obliquely. In similar fashion the half cell DEF will be filled up, and in this also the two top planks will meet the ridge obliquely. On both sides of the ridge, then, there are unsightly and somewhat weak joints. These, however, with care may be avoided, as is shewn in diagram 3. If the carpenter will take the trouble to saw each plank so that one end is narrower than the other, then there need be no oblique jointing at the ridge, and the ridge of the vault will be less unsightly and stronger as well. Evidently,

however, the latter method involves a great amount of extra trouble to the carpenter.

Most vault cells, however, are not filled in with planking but with masonry. Sometimes bricks were employed; *e.g.*, in Beverley nave. Let us imagine a bricklayer to be supplied with bricks, all of uniform size,[1] and told to fill in the half cell AEF starting at the top of the solid springer or corbel AKJ. With the aid of wood centering beneath to keep the bricks in place till the mortar sets, he could quickly build up *parallel* courses on one another till he reaches the ridge EF. Here, however, he would have no less than fourteen oblique joints; how this would look is shewn in the skeleton vault on p. 291.2, and still more clearly in the measured drawing of one half of a bay in Westminster cloister (321). (The Westminster masons emphasised the obliquity of their courses, *e.g.*, in the presbytery (314), by interspacing courses of dark Reigate sandstone.) The above was the favourite method of web construction in England, and is not uncommon elsewhere; *e.g.*, it is the normal method in much of the south-west of France. The advantage possessed by it is that all the blocks employed could be cut to uniform dimensions, and little shaping on the scaffold was required. By this method, haphazard as it may be, the vault cells could be filled in easily and rapidly, and without any loss of stability; and that was enough for the English mason.



W. A. O. Bristol Cathedral: Sacristy

We will now try a fourth method of filling in, and this time we will supply the mason with blocks of some stone, such as chalk, which is at once light and easy to work. The procedure is shewn in 325.4. The mason begins as before at KJ, and the way he lays his first course is very instructive. It will be seen that he has shaped all the four blocks of which it consists so that they taper away towards the transverse rib and get broader towards the diagonal rib. All the other courses above are dealt with more or less in the same manner, though this cannot be brought out prominently in a small diagram. The result is that when he reaches the ridge at FE, he has a beautiful straight joint, and none of the saw-tooth junctions that we saw in the diagram of the Westminster cloister. He will no doubt fill in the other half cell DEF in the same fashion, and the two half cells AEF and DEF will meet in a straight joint along FE. This last method

[1] The bricks in diagram 5 ought to be shewn uniform in breadth, but are not.

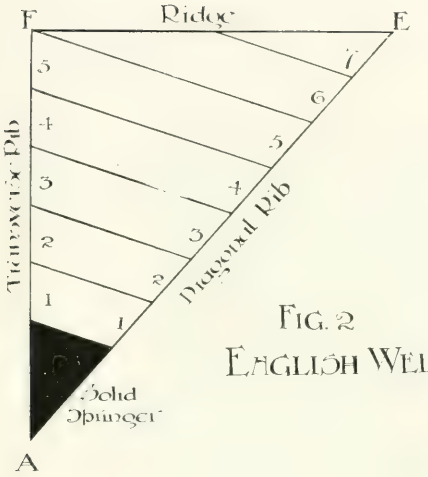


FIG. 2
ENGLISH WEB

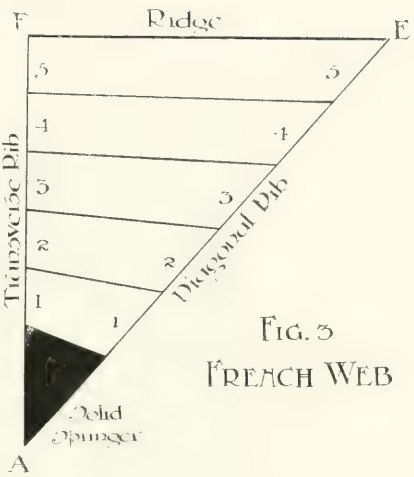


FIG. 3
FRENCH WEB

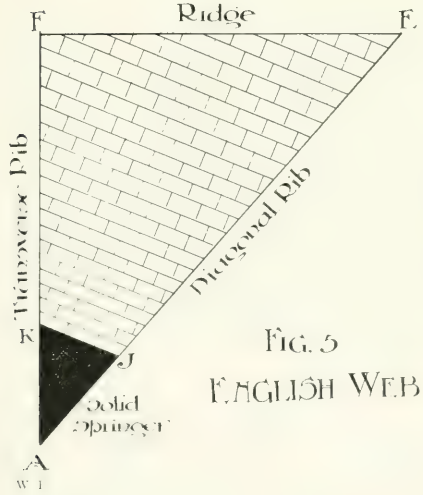


FIG. 5
ENGLISH WEB

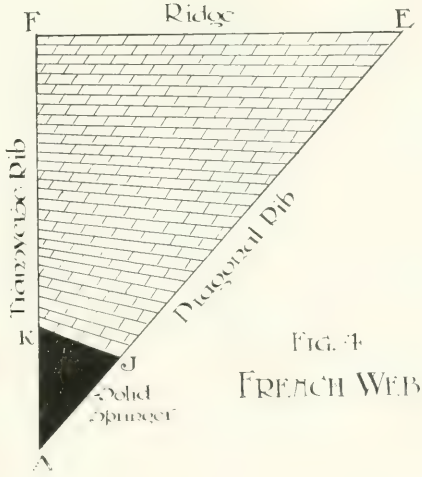
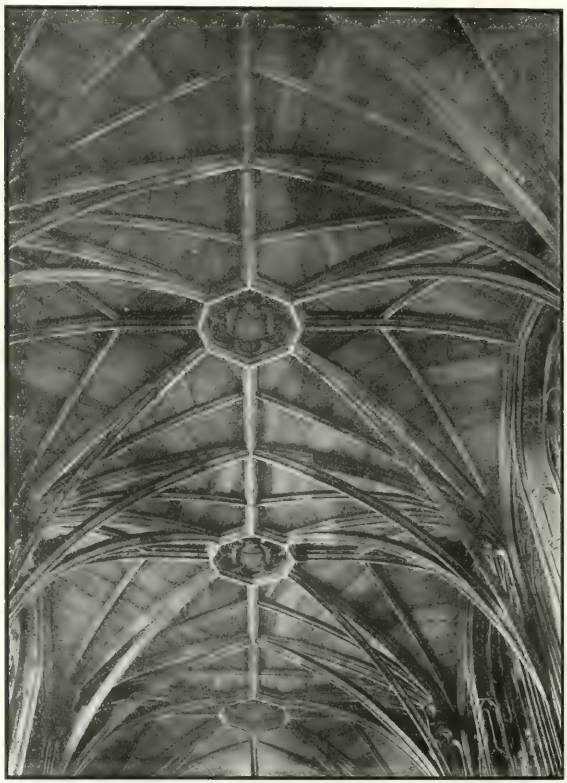


FIG. 4
FRENCH WEB

must have involved a great amount of time, skill, and labour, and have added considerably to the cost of vaulting. But when it was done, it was scientific and right and good craftsmanship. The two methods of filling in vaulting cells are characterised as the English and French methods respectively: but the employment



Warwick St. Mary: Chancel

of the terms is subject to many exceptions; *e.g.*, in England the French method is employed in rubble vaults in the Chapter house of Buildwas abbey, the aisle of the north transept of Ripon (315), the Elder Lady chapel of Bristol, and the Angel choir of Lincoln (320); and in ashlar vaults at Chichester, St. Cross, Winchester (299), New Shoreham, and elsewhere. On the other hand, the English

method is common in the south-west of France. Good examples of the English method are shewn in Salisbury choir (752) and Chichester retro-choir (749), and in diagram 291.2; and of the French method in diagram 291.1 and 3, and 293.4.

The French method of web construction was scientific and artistic; it was good construction and was pleasing to the eye. But when a method is perfectioned, progress and invention stop; satisfaction is the enemy of improvement. And this is what happened in France. Their builders had commenced *c.* 1120 with simple cross-ribbed vaults of quadripartite type; and to these with few exceptions they adhered for nearly three centuries. The chief exception is the broad and lofty vault of the crossing; that of Amiens is perhaps the earliest example, *c.* 1265; it has ridge ribs and tiercerons.[1] The highly complex vault systems which commenced in Lincoln nave, *c.* 1230, and which in the following century produced such magnificent vaults as those of Gloucester cathedral, did not find their way into France till the fifteenth century.

VAULTS WITH RIDGE RIBS AND TIERCERONS

When two half cells of a cross-ribbed vault were filled in the English fashion with coursed ashlar, there was a ragged joint where the upper courses met at the ridge; worse still was the joint when they were filled in with coursed rubble. To improve this joint and to hide it from view,[2] a new rib, therefore, a *ridge rib* (French *lierne*), was devised, indented on either side to accommodate the oblique ends of the voutains of each of the courses. As each vaulting bay has two ridges, one running lengthwise, the other crosswise, two ridge ribs were needed. At first, however, only the former was employed, viz., the longitudinal ridge rib. This occurs early in Westminster presbytery (314) and in Lincoln choir and transepts (303), and soon after in the chancel of Southwell minster. In these vaults the diagonals rise rather higher than the outer arches, and each bay is therefore slightly domical; consequently the longitudinal ridge rib in each bay rises from the boss of a transverse arch to the boss of the diagonals, and then descends to the boss of the other transverse arch. This rise and fall of the ridge rib in the successive bays has an unpleasing effect; and one reason why the longitudinal ridge rib was so long in getting a footing in the Northern French school may be that their vaults were as a rule considerably domical, and a horizontal ridge rib was therefore

[1] A similar vault occurs beneath the central tower of Beverley minster (317).

[2] So also Mr Brutails, "Pour cacher cette assemblage irrégulier," *Précis d'archéologie du Moyen-Age*, 138; and M. Enlart: "La lierne" ("ridge rib") "arrive fort à propos pour masquer le raccord difficile et peu gracieux des voûtains appareillés suivant cette méthode."

impossible.[1] When Worcester retro-choir was vaulted (begun in 1224) domical vaulting was avoided; the longitudinal ridge rib from east to west is horizontal; so it is also in the presbytery of Westminster, begun in 1245 (314); in Lincoln nave, *c.* 1213-1255 (38), and in Ely presbytery, 1235-1252. A continuous horizontal ridge rib is a great improvement to a mediæval church; without it the interior seems to consist of a series of unrelated bays; the longitudinal ridge rib binds them together and enforces unity; without it the skeleton of the vault is all ribs and invertebrate; the lack of it is badly felt at Beverley (776). So much was it appreciated that it was triplicated in some of the richer vaults; *e.g.*, in the nave of Tewkesbury (43), and in the choir and Lady chapel and the western bays of the nave of Gloucester.[2]

The next thing was to add transverse ridge ribs; they appear in Lincoln nave (373), Ely presbytery, and Westminster nave, 1254-1262. In Westminster these extend the whole breadth of the church from above one clerestory window to above the window opposite; at Lincoln and Ely they are abbreviated, as the cells nearest the wall are tilted up to give headway to the clerestory windows, and ridge ribs, if they had been added, would have run uphill;[3] which would have been unsightly, though constructionally unobjectionable. The high vaults of Guisborough also had this plan; an example is illustrated from the aisle of Malvern chancel (316); see also 370.6

Simultaneous with the introduction of the transverse ridge rib was that of the *tiercerons*.[4] Here again the palm of priority rests with Lincoln; tiercerons being employed in the vault of the nave (373); this vault is copied in the presbytery of Ely; and is reproduced with modifications in Westminster nave. Tiercerons occur in pairs in each cell; they spring from the same capitals as the diagonal and transverse ribs; they resemble the diagonal ribs in that they run obliquely, but they differ from them in that they rise not to the central boss, but to some point on one of the ridge ribs. When a diagonal or transverse rib meets the corresponding rib at the boss, they are in the same line, being the two sides of an arch; but two tiercerons or half arches meet obliquely, and having no other half arch to butt against, something is wanted in place of the missing half arch; this is supplied by the ridge rib, which is indented to receive the oblique ends of each tierceron. This then was a second and an important function

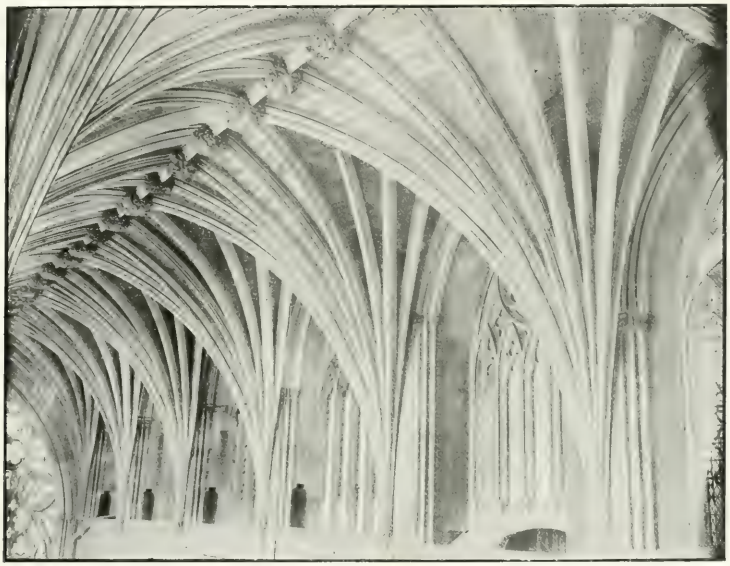
[1] It has been urged that since the English webs were composed of blocks of more or less identical dimensions, they tended to become not arched but flat, as if made of planks nailed across; and that consequently they were weak and needed intermediate ribs to support them (Dr West's *Gothic Architecture*, 63, 78, 79). But the reason lies rather in the English preference for rubble instead of ashlar.

[2] In these the flanking ribs are parallel to the ridge ribs, but are not themselves ridge ribs.

[3] As they do in Worcester cloister (375).

[4] These are sometimes styled *intermediate ribs*; but this term is ambiguous, being also applicable to the intermediate transverse ribs of a sexpartite vault, such as that of the central transept of Lincoln (303).

of a ridge rib -to provide abutment to tiercerons.[1] The addition of tiercerons greatly facilitated the process of filling in the cells, especially when rubble was employed; for they diminished by at least one half the distance to be spanned by centering, which latter, therefore, could be light and simple: this probably in the eyes of the masons was the greatest recommendation of all. They rapidly came into favour, and received fullest development by 1270; nor did they ever lose their popularity till the last days of Gothic architecture. If we take the case of their employment in the oblong bays of the vault of a nave, we may find a pair



I. K. P. Exeter Nave

in each of the eastern and western cells (373.3), or of the northern and southern cells; or each of the four cells may contain a pair, as at Beverley (373.1), Norwich (323), and Lincoln (373.2); or two cells may have one pair and two may have two pairs, or each of the four cells may contain two pairs; and so on; a great variety of combinations was possible. The vault with ridge ribs and tiercerons culminates at Exeter (373.4); where the presbytery was set out *c.* 1270; here the oblong bays contain one pair of tiercerons in the eastern and western, and three pairs in the

[1] One reason why the transverse ridge rib was so often truncated was that it was not thought worth while to prolong it beyond the point of abutment; *e.g.*, in Lincoln nave (373.2).

northern and southern cells; it is just the vault of Lincoln nave over again, except that two more pairs of tiercerons are added in the northern and southern cells; the uninterrupted flow of these great sheaves of curved transverse ribs, tiercerons, diagonals, and wall ribs to the ridges of each cell is exceedingly impressive; all the arches in the church seem to be racing upward to gain the ridges of the vault: the development of the English vault might well have been allowed to stop at Exeter (329).

Equally effective was the employment of ridge rib and tiercerons in solving the problem of vaulting a polygonal space. Of the polygonal Chapter houses the vault of that of Westminster, finished *c.* 1253, is of the simplest type (373). The Chapter house is an octagon, and from the corners of its wall rise eight pointed arches which descend on to the central pier; thus eight bays are formed; in each bay of these is a pair of tiercerons, and a rib descends from the junction of the tiercerons to the central pier (333). The Salisbury Chapter house, begun between 1263 and 1271, is also an octagon; eight pointed arches span the space from central pier to wall; each of the eight bays contains a pair of tiercerons, and ribs descend on to the central pier; just as at Westminster. In vaults of this type Lincoln led the way; the ten-sided Chapter house (335), the square Morning chapel and the Consistory Court (304), are all vaulted with unerring ingenuity,[1] the former of the two, like Lincoln Chapter house, with a central stalk, the latter without one (373). Southwell Chapter house is a blend of the Chapter house and Consistory Court of Lincoln; like the former, its rib system is made up of transverse arches, coupled pairs of tiercerons and ridge ribs; like the latter, it omits the central pier, its transverse ribs rising to the apex of the Chapter house.[2] Our Chapter houses are the supreme achievement of English Gothic; and of them all that of Southwell is the queen.

LIERNE VAULTS

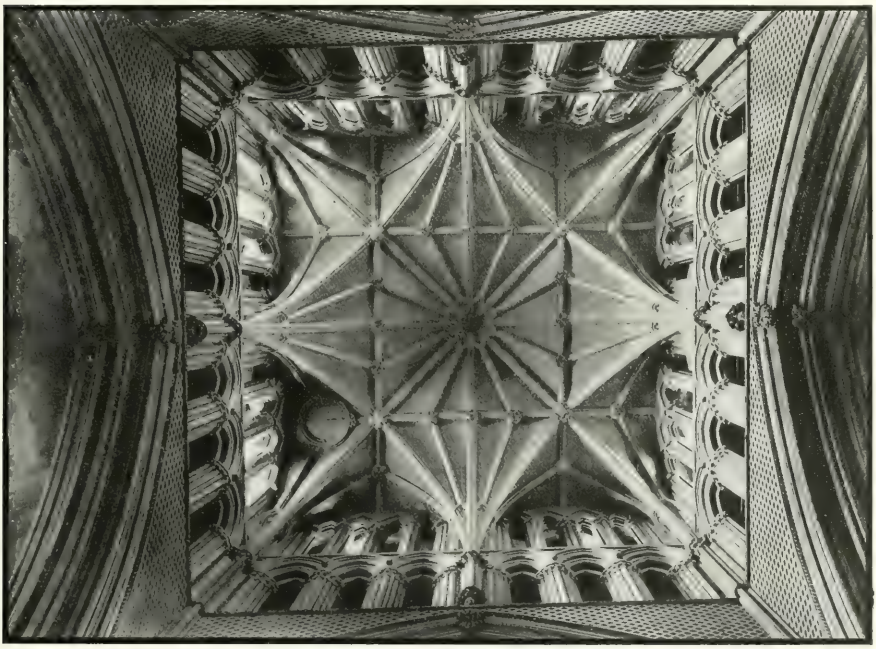
So far all the ribs of the vaults have had some important constructional object; but in the last years of the thirteenth century ribs were introduced which were mainly decorative; perhaps the earliest are those of Bristol chancel, begun in 1298. These ribs are styled *liernes* or tie-ribs ("*lier*" = "to tie");[3] they do not rise to the central boss; neither do they spring from the capital of a vaulting shaft; they pass from any point on any one rib to any point on any adjoining rib as may be necessary to produce pretty patterns—squares, rhombuses, hexagons, octagons, star-shaped figures,

[1] See *Gothic Architecture in England*, 340, 325, 308.

[2] For plans and description of the Chapter house and Lady chapel of Wells see *Gothic Architecture in England*, 325.

[3] In France it is the ridge ribs which are styled *Liernes*.

etc.; when there is a great reduplication of identical patterns, they may be called *Reticulated* vaults. Of Reticulated vaults those of Bristol choir and of the Warriors' chapel, Canterbury (rhombuses), the south aisle of Worcester nave (squares), the high vault of Wells choir (squares and octagons), the undercroft of Wells Chapter house (triangles), the south transept of Gloucester (intersecting rhombuses), Worcester cloister (337) and the Black Prince's chantry chapel at Canterbury



S. S.

Lincoln: Central Tower

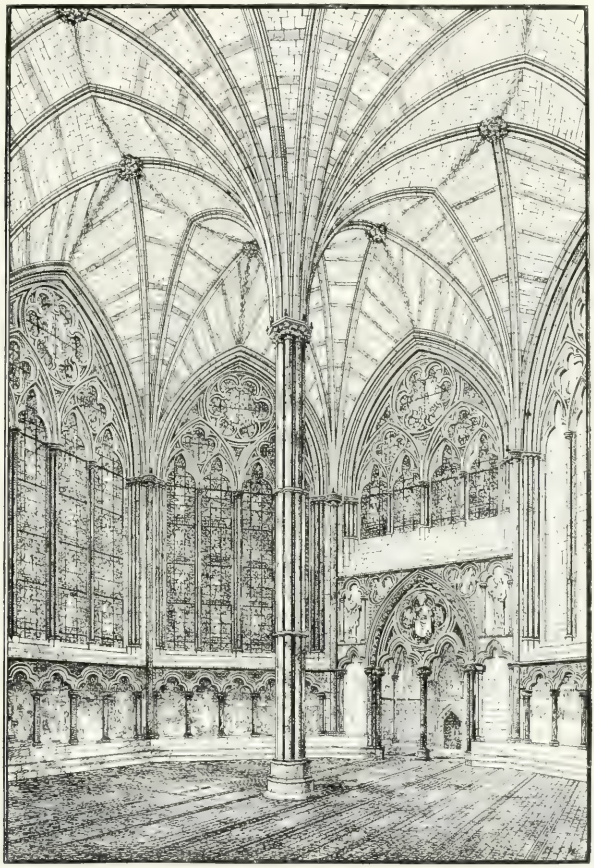
(octagons) are elaborate examples; but the diversity and complexity of lierne vaulting is such as to defy classification. In some cases, *e.g.*, in the pattern of squares in the south aisle of Worcester nave, the designer has not taken into account that the patterns will not be worked on flat surfaces but on curved surfaces, and, when executed, some of the squares may come out sadly distorted. On the other hand a set of patterns which look symmetrical in the vault are unsymmetrical when set out on paper; as an example of this may be cited the miniature vault of Archbishop Stratford's monument in Canterbury cathedral. Excessively elaborated lierne vaulting

is common on the underside of the canopies of monuments, for which its minute pattern-work is very appropriate.

The artistic merits of lierne design vary greatly. Roughly it may be said that in its simpler forms, *e.g.*, in most of the Reticulated forms mentioned above, as in the high vaults of Bristol cathedral (381), St. Mary Redcliffe, Malmesbury (379), Christchurch (339), and Pershore (379), the lierne vault is often very objectionable; it compares very unfavourably with such a vault as that of Exeter, where every curve of the vault appears to flow upwards to bear up the ridge of the church; collections of rectilinear triangles, squares, rhombuses and the like jar on the general arcuated design of the church. But in its most highly developed, intricate and complex stellar patterns it makes a glorious coronal and culmination to all the great church below; one does not reason about its rightness or wrongness; one is simply thankful for its beauty. Even if one were inclined to cavil at that, one cannot but wonder at the ingenuity of the designer and craftsman, of the perfection of practical geometry in the true and accurate cutting of all the joints, curves, and moldings to the required angles, and the triumph of mason craft, resulting in a construction not only intricate in design and workmanship, but also sound and safe in spite of the apparent danger of such playing with heavy stones at such heights and with such frail-looking supports. The effect of a church ceiled with a rich lierne vault is that of a tower plain below, like that of Magdalen College, Oxford, but parapeted, battlemented, and bepinnacled above; nothing in English architecture is more striking and effective than the contrast of the simple, bare Norman nave of Norwich cathedral with the magnificent lierne vault above. It may be doubted if the wide world contains any mason work more superb than the high vaults of Gloucester (preface) and Tewkesbury (340), the nave of Winchester (35), and the high vaults of Norwich; and even these pale before the richness of those of Sherborne, Windsor, and Oxford cathedral. In Windsor and Oxford it may be noted that the vault design is really a blend of two systems; Windsor has a segmental tunnel vault flanked by a lierne vault; Oxford a lierne vault flanked by segmental tunnel vaults.

There is no end to the diversity and no end to the interest of the later vaults; *e.g.*, in the vaults of Winchester and St. Mary Redcliffe the builder amuses himself by omitting the diagonals (382). In Bristol choir—an early example—he omits transverse arch and longitudinal ridge rib, and truncates transverse ridge rib and tiercerons (381). In Malvern tower he flanks each ridge rib with a parallel longitudinal rib, but truncates ridge ribs as well as diagonals to leave room for a bell hole (379). In the tower of Cricklade (376) the ridge ribs and diagonals are similarly shortened for a bell hole. Sometimes, in narrow vaults, he inserts skeleton ribs supporting or pretending to support the main ribs of the vault, as in the sacristy of Bristol cathedral (324), the Choir screens of Lincoln and Southwell, and the chancel of St. Mary's, Warwick (326): both Bristol and Warwick have

normal transverse and diagonal ribs, but are provided with additional transverse and diagonal ribs springing at a much lower level, and flying through the air. At St.



W. S. W. Westminster: Chapter House

David's the chantry in the Choir screen has the same skeleton vaulting as the Bristol sacristy; Bishop Gower, who founded the chantry, and Abbot Knowle of Bristol, were friends; the St. David's stone was shipped from the quarries at Dundry, Somerset; and the Bristol and the St. David's masonry bears the

same masons' marks; evidently it was wrought by the same men. And even these West of England masons—it was from Gloucester and Bristol that all the great developments of our later Gothic radiated—did not find out all the secrets of lierne vaulting: they were almost always satisfied with ribs of simple curve; but the Spanish masons—our only rivals in vaulting—often employ ogee curves and patterns, with quite delightful effect; *e.g.*, in Segovia cathedral and beneath the central tower of S. Juan de los Reyes, Toledo (348).[1] So successful were the English lierne vaults that they remained in use till the end; not even their great rival, the fan vault, equalled them in popularity. And no wonder; the fan vault is a marvel of craftsmanship; but one fan vault is very much like another; there is little of the astonishing diversity of design that marked the lierne vaults; the vaults of Gloucester transepts do not prepare you for that of the choir, nor that of the choir for that of the Lady chapel; nor any of the Gloucester vaults for that of the nave of Winchester; nor that of the nave of Winchester for that of the nave of Norwich, nor that of the nave of Norwich for that of the choir of Oxford cathedral.[2]

Only on one great school of Gothic, that of the North of England, did the two Bristol and Gloucester vault systems—the lierne and the fan—fail to make an impression. In its early days it had made itself ignominious by ceiling many naves with wood; later, when they were vaulted, only simple forms of vault were employed: north of Norwich one sees no rich lierne or fan vaults, or where they exist they are on quite a minor scale, unless it be in Howden Chapter house.

The introduction of the lierne rib pointed the way incidentally to what might have been a revolution in vault construction. Ridge ribs and tiercerons had been added previously; when liernes also were added, the vault became nearly all rib. The difficulties of web-construction, the need for wooden centres for it, had nearly disappeared; every bit of a small vault, *e.g.*, that of a cloister or a porch, could be closed in by simply dropping down a flat slab resting on two *rebated* ribs.[3] Such a vault is partly rib, partly panel; the latter replacing the arched courses of voutains of which the webs of the earlier vaults were composed. This *rib and panel* construc-

[1] Ribs curved on plan, however, are employed at Ottery St. Mary (349), Devon, in the second quarter of the fourteenth century.

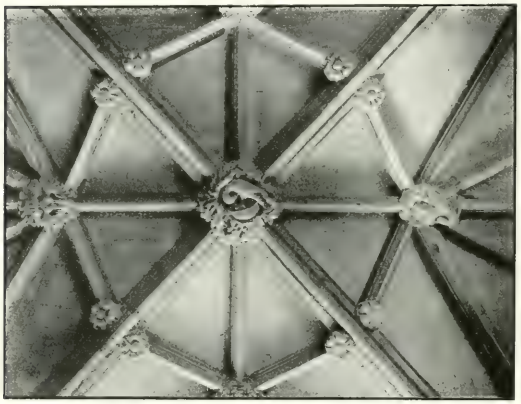
[2] Some of the most elaborate and successful lierne vaults are to be found in porches and cloisters, under towers, and especially in monuments. Of complete lierne vaults on a large scale the following are among the most important: Bristol cathedral and St. Mary Redcliffe, the Warriors' chapel, Canterbury, the choir and Lady chapel of Christchurch, the Lady chapel and West's chapel, Ely, the chancel, transepts, and Lady chapel of Gloucester, the nave of Malmesbury, the chancel of Nantwich, the nave, chancel, and transepts of Norwich, Ottery St. Mary, the Divinity School, Oxford, and the choir of Oxford cathedral, Pershore chancel, Tewkesbury nave, chancel, transept, and crossing, the chancel and Lady chapel of Wells, the nave, chancel, and Lady chapel of Winchester, the high vaults of St. George's, Windsor, and the south aisle of Worcester nave.

[3] Ribs grooved on each side to receive the panel (285.20).

Lincoln : Chapter House

tion is seen in many lierne vaults, most often in small examples; *e.g.*, Malvern porch and tower (379), and in Norwich (323) and Worcester cloisters (337). It is also common in fan vaults; *e.g.*, in the choir of Bath abbey and the tower of Milton Abbas (362).

Often, however, the builders went further; *e.g.*, in Gloucester cloister; they cut a slab in such a way as to leave a rib in the centre with a broad flange on each side; or, to put it in other words, they took a flat slab, and cut down the surface on either side so as to leave a rib projecting in the centre. Some of the later vaults were entirely constructed in this way; *e.g.*, the fan vault of Henry the Seventh's chapel at Westminster, as may be seen at a glance on inspecting its upper surface (367).



Canterbury: Black Prince's Chantry Chapel

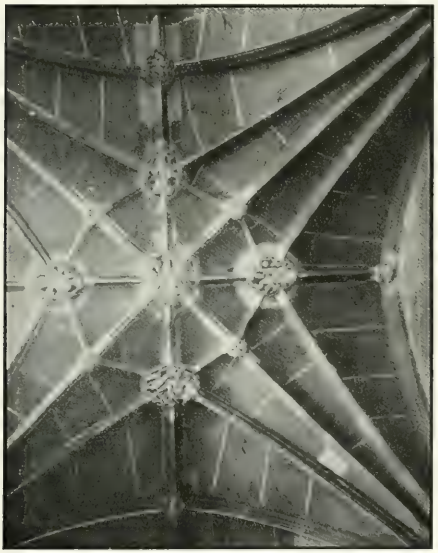
More often both methods were used together in different parts of the same vault, whichever happened to give the least trouble; *e.g.*, in the fan vault of King's College chapel, Cambridge, the widest of all fan vaults, 44 ft. in span (359); in the lower part of the vault it was easier to cut each rib separately, and then drop in panels on each pair; in the upper part it was easier to cut rib and panel out of the same block; the latter is the system adopted in the fan vault of Peterborough eastern chapels, and in the lierne vaults of the nave and choir of St. George's, Windsor (346), which, like the wonderful fan vault of Henry the Seventh's chapel at Westminster, are from the hand of Robert Vertue.

It is not difficult to distinguish the two methods of procedure. In the first, *the rib and panel* vault, there will be a joint on either side of the panel; in the second, there will be a joint about midway between the two ribs. In the latter, the rib is not a real rib at all; it is merely a part of the panel; the vault is a *panel vault* pure and simple, with decorative ribs[1] formed on its surface. If there were no ribs at all, this latter vault would stand equally well, and would be seen at once to be all panel. And this indeed is precisely what one does see if one mounts on to the backs of such vaults as those of Sherborne (360), Windsor, or Henry the Seventh's chapel at Westminster; seen from below they are a mass of ribs, from above they are largely or wholly

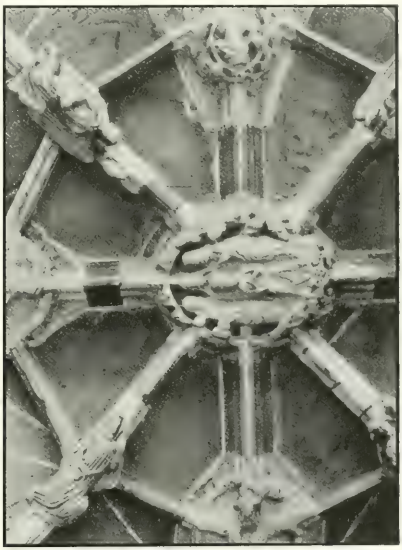
[1] They have constructional value to the extent that they strengthen and stiffen the web.

ribless. Thus in the zenith of its triumphal career the rib was struck down. At Durham there had been but two diagonal ribs. In Lincoln choir and transepts there were added ridge ribs. In Lincoln nave tiercerons were added. Bristol added lierne ribs. The Gloucester masons made their choir vault a mass of ribs, bewildering in its intricacy. These same masons invented the rib and panel vault; and then finally the vault which was all panel.

Other yet greater revolutions were on the way, when the religious changes of the sixteenth century put an end to Gothic architecture. If an arch be erected which

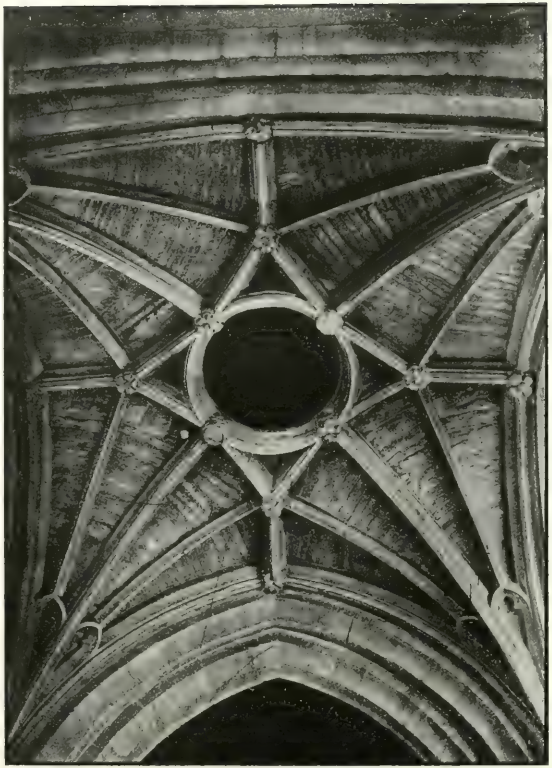


F. B. Worcester Cloister

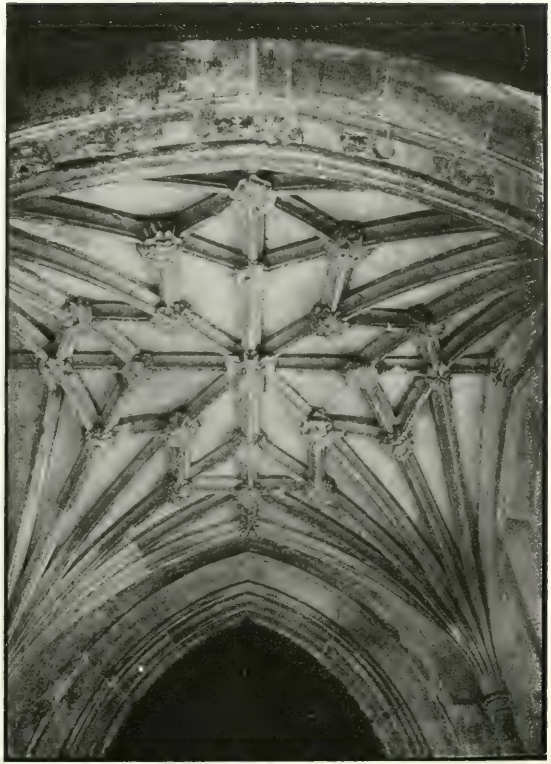


F. B. Worcester Cloister

is fairly acute, it will have no lateral thrust (see p. 434). A vault is but an assemblage of arches, and if these also be of acutely pointed section, the vault will have no lateral thrust. If such a vault as that of Wells choir be examined, in which the rib system consists of an assemblage of squares and octagons, it is pretty obvious that the stability of the vault does not depend on the ribs. Yet the vault stands safe, as do those of Ottery St. Mary, Sherborne nave, Gloucester choir, Henry the Seventh's chapel, Westminster; none of them depending for safety on ribs. At Ottery St. Mary, Devon, is a lierne vault whose ribs are not constructional, but mere ornament (349). For "when the whitewash was picked off at the last restoration, the

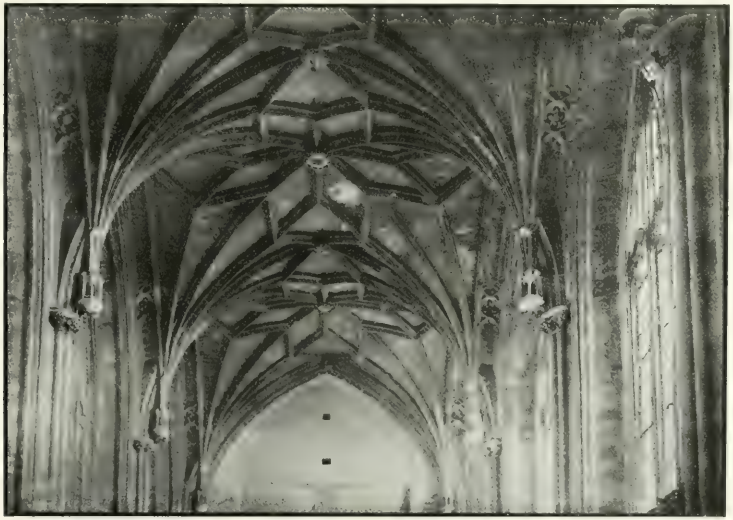


F. H. C. Minster Lovell : Tower



F. H. C. Woolpit Porch

real arches, made of common masonry, were laid bare, crossing the church at proper intervals without any regard to the position of the ribs."[1] So also Gloucester choir has the ancient Norman demi-berceau inside the triforium gallery (735); but it is too low down to give much abutment to the lierne vault; the vault stands safe because it is in reality a pointed tunnel vault.[2] Sherborne chancel and nave have high vaults, partly lierne, partly fan; the chancel was vaulted first and was provided with flying buttresses; but none were given to the nave; the builders trusted to its pointed section (396). So also in Henry the Seventh's chapel at



H. E. M. Christchurch Presbytery

Westminster, though its wall-piers are unbuttressed, the vault is safe through having been built pointed in section (366). A still more venturesome feat was accomplished in the Dorset aisle at Ottery St. Mary and the Lane aisle at Cullompton (364), Devon; fan vaults being erected one side of which rested on pillars; that the latter were not thrust over is due mainly to the fact that both vaults were acutely pitched. The aisles of Maidstone chancel and the Lady chapel of Rochester were designed for fan vaults to be put up under similar conditions, but they were never built. It may be that it was to get a vault of acutely pointed section that the high vaults of

[1] It is a tunnel vault, built in horizontal courses, precisely like a wall.

[2] But partly also because the clerestory buttresses are exceptionally massive.

Wells were built in the last years of the twelfth century with the diagonal ribs pointed as well as the transverse ones. If so, it would seem that the builders of the high vaults of Gloucester, Sherborne, and of Wells choir were but carrying on the tradition of the twelfth-century vault-builders of Wells and Glastonbury.

Time does not permit to work out the corollaries of the solution of the thrust problem. It means that the one offensive thing about Gothic construction, its abutment system—its buttresses, pinnacles, and fliers—the whole apparatus of permanent stone scaffolding which cuts up the flanks of Gothic buildings to the ruin of all breadth of effect, and which is one great reason why Gothic architecture failed to compete with the unbroken wall-surface of Classical and Renaissance buildings—might have been cast to the winds; there was no reason why Gothic architects also should deny themselves the effect of broad unbroken expanses of wall, on which they could design unhampered, without stumbling every few yards over a projecting buttress.

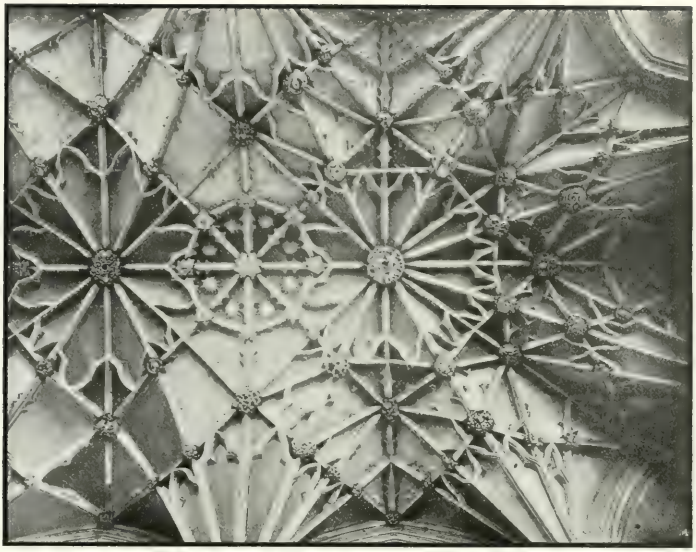
W. G. B. Tewkesbury Chancel

FAN VAULTS

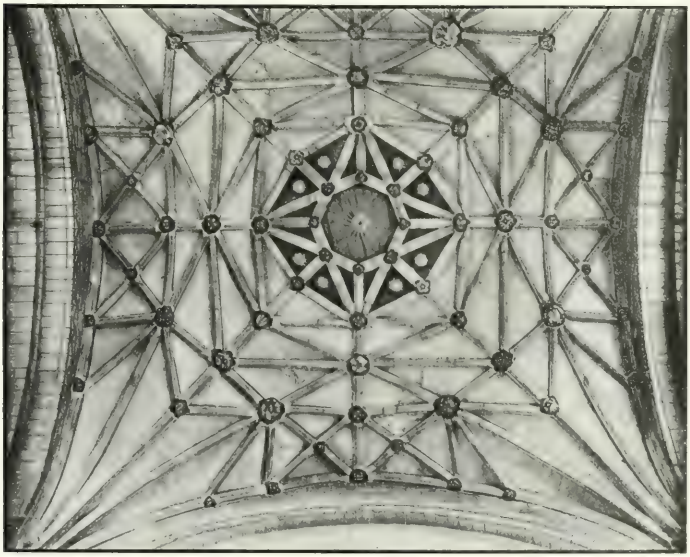
One more artistic and constructional triumph is left with which to credit Gloucester and England; it is the fan vault.[1] It is one of those things which in the development of the English vault was bound to come; though it never came in France, Spain, or any other of the great Gothic districts.[2] We owe it, as we owe so much else, to the desire of the natural man to take short cuts and to get the

[1] A fan vault is one with a network of ribs, *all of the same curve*, and usually of the same length, and spaced at equal angles with one another.

[2] A few fan vaults were built in districts near the Baltic.

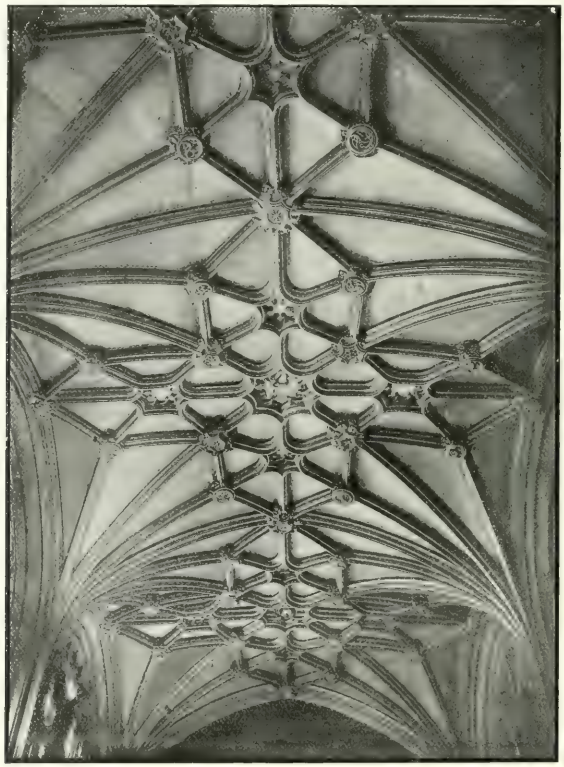


W. G. B. Tewkesbury Presbytery



W. G. B. Tewkesbury : Central Tower

maximum of result with the minimum of labour; architectural progress owes much to the lazy man; laziness, quite as much as necessity, is the mother of invention. To save himself trouble, the English mason had long persisted in retaining a web of rubble; when he consented to take French advice and substitute ashlar, to save



E. H. C. Beauchamp Chapel: Warwick St. Mary

himself trouble he built each course with blocks all of the same width; again, to save himself trouble with the ragged joint at the ridge, he added a ridge rib; to save trouble in centering, he added tiercerons; to make web construction still easier, he overspread the whole cell with a network of liernes, so that all the web-construction he should have to do should be to drop in panels from rib to rib; to save himself

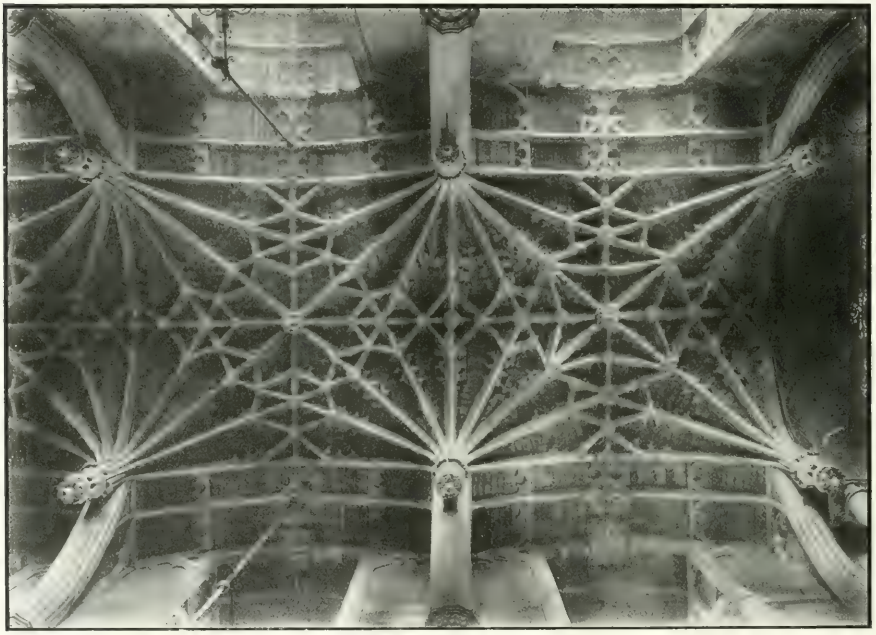
yet further trouble, he cut panel and rib out of the same block. But here, as often, short cuts led a long way round; he had been successful in whittling down the web till it was reduced to panels and finally disappeared altogether. But all the time, the more he simplified the construction of the web, the more intricate and complex he made the construction of the rib. It was in facilitating rib construction that his final effort was to be made.

If we examine the very simplest form of cross-ribbed vaulting, a bay containing

F. J. H. Oxford: Divinity School

diagonal and transverse arches, *e.g.*, at Southwark (290), it will be seen that three ribs—two diagonal and one transverse rib—spring from the vaulting shaft on each side. The diagonal ribs are considerably longer than the transverse rib; and as all three have to rise to the same height, viz., to the ridge, which is level, it follows that they start off at very different angles, the short transverse ribs having a much more vertical curve than the long diagonals. The juxtaposition of these discordant curves is unpleasant, and attempts were made to avoid it by various dodges. If

from the vaulting shaft there rose in addition two wall ribs and two tiercerons, as in Lincoln nave (373), the effect was less unpleasant. If, as at Exeter, six more tiercerons were added, the springer or solid corbel of the vault became comparatively sightly (373). On the other hand, it is to be remembered that both the ridges of the vault—that in the direction of the axis of the church and that at right angles to it—are horizontal; all the thirteen ribs, therefore—one transverse, two diagonal, two wall ribs, eight tiercerons—have to rise to the same height;



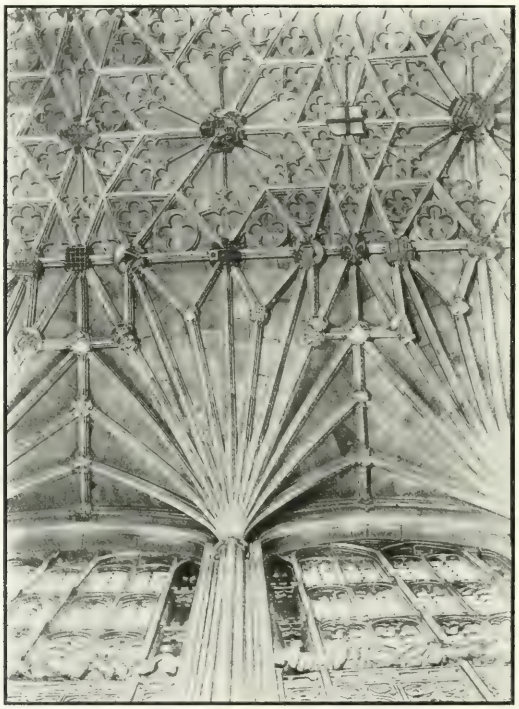
W. F. Oxford Cathedral: Presbytery

and as they all spring from the same level—the top of the vaulting shaft—it follows that they are of seven different lengths. For the wall ribs are shorter than any of the tiercerons; the latter exhibit four variations of length, and three of them are shorter and one longer than the transverse rib, which again is shorter than the diagonal rib. But if they are of varying lengths, they are also of varying curvature, and the mason will require a great deal of assistance in the way of working drawings. These will have to be reproduced full size, on boards laid flat on the ground, involving a great amount of trouble to the draughtsman, and a great deal of care

F. I. H.

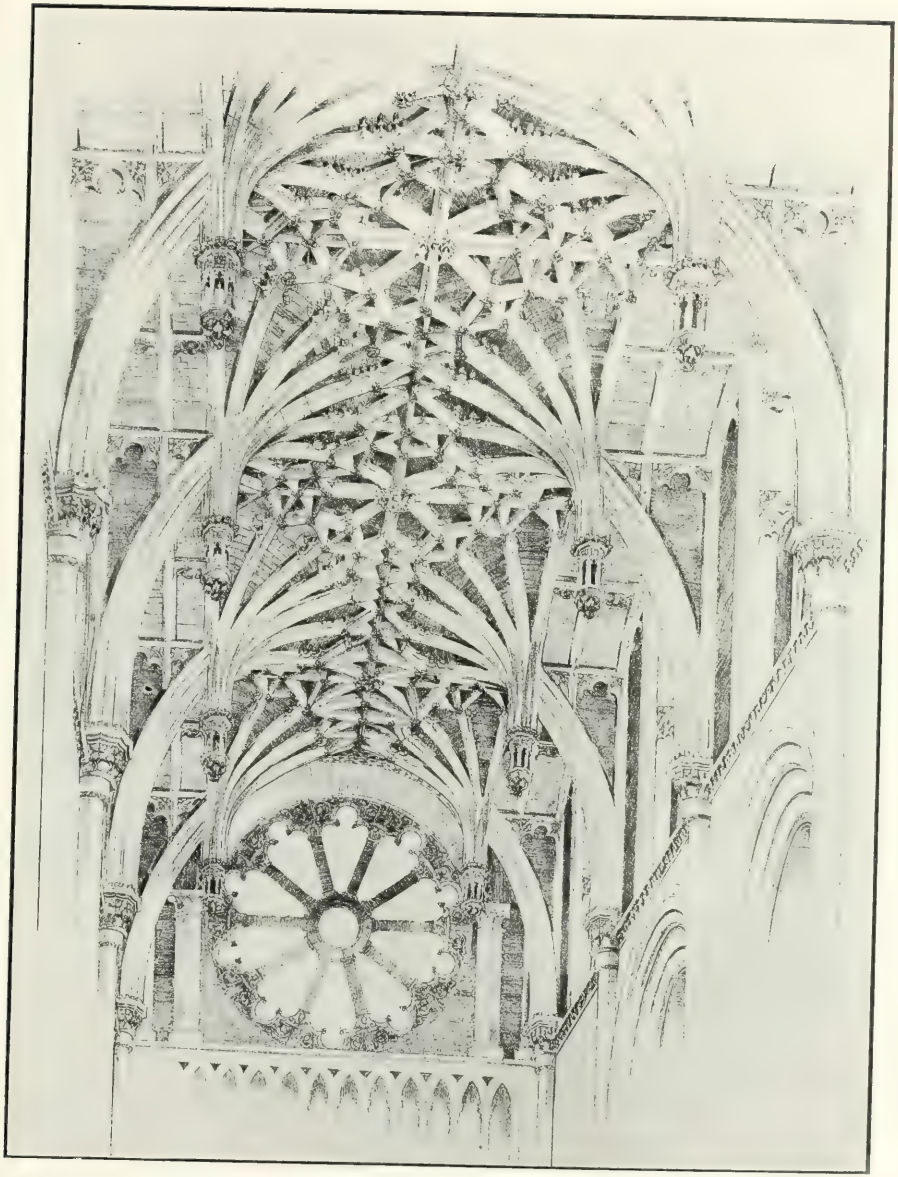
Oxford Cathedral Choir

on the part of the mason in minutely conforming to the exact curves set out in the working drawings. Here comes in the labour-saving craftsman's great achievement. Instead of making the ribs of so many curvatures, why not give them all one and the same curve? This is precisely what was done. What particular curve should be selected was a matter of taste. If it were a rather



St. George's, Windsor

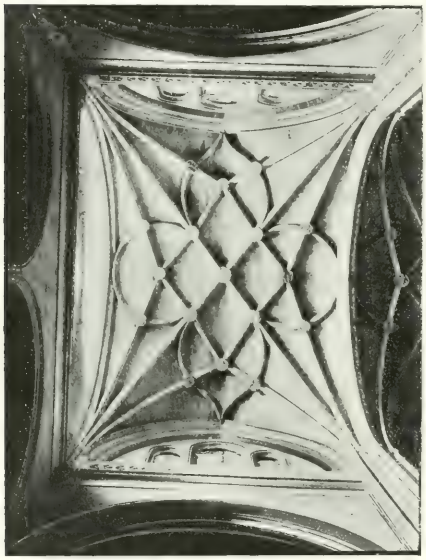
vertical curve, then more of the lower courses of the ribs could be constructed without centering, and there would be less lateral thrust. On the other hand, if it were a flattish curve, it would not be necessary to build the roofs and the walls so high. But it was found that neither of these objects need be sacrificed. All that was necessary was to employ not a simple, but a compound curve, of which the short lower part should be much more vertical than the long upper part.



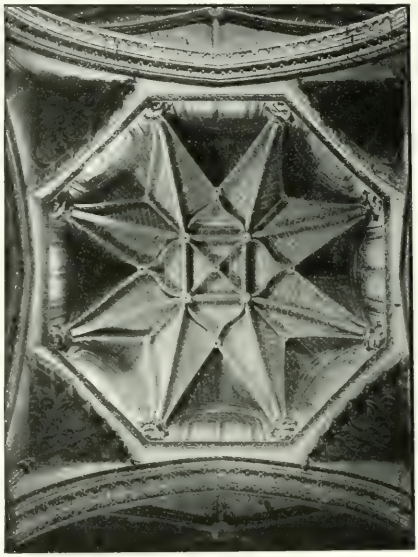
J. M. L.

Oxford Cathedral : Vault of Presbytery

Such a curve was ready to hand; to get it, it was merely necessary to halve the well-known four-centered arch. This was the highest development of the fan vault; it was formed, if we are to be scientific, by the revolution of one half of a four-centered arch round its own vertical axis. With this went another simplification. The ribs now being all of the same curvature, they were also made of the same length.[1] Thus the vaulting corbel arrived at the shape of a half-trumpet, *i.e.*, an inverted conoid. The third step was that which had been taken already in many lierne vaults; viz., to build up the inverted conoid without



F. P. Segovia Nave



F. P. Toledo

any ribs at all; making it consist simply of slabs fitted together like the tiles of a chancel pavement. There remained the question of the decoration of the conoid. Its outer circumference consisted of a semicircle; a simple method was to divide it up by one or two minor semicircles, and decorate each with radiating window tracery. This was not only simple, but had the effect of bringing the vault surfaces into harmony with the windows; and harmony and unity were all in all in late Gothic design. Painting might have been employed, as in the canopy over the

[1] At times, however, the ribs were allowed to stray into the spandrels; thus producing different lengths; *e.g.*, at Sherborne (361) and Milton Abbas tower (362).

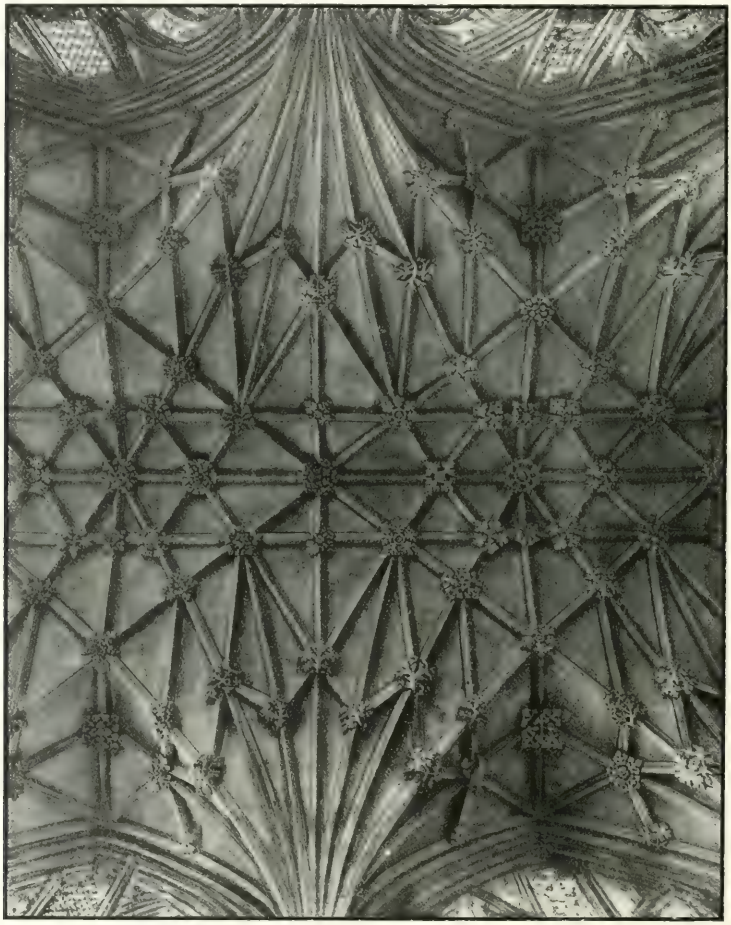
effigy of Sir Hugh Despenser, *ob.* 1349, in Tewkesbury abbey, where the craftsman painted sham ribs on the diminutive conoids; it is possible that this may have actually suggested fan-tracery vaults; for this tomb is earlier than the fan vault with stone ribs built over the southern bays of the east walk of Gloucester cloister between 1357 and 1377, which is the first on record.

In some such way the fan vault was evolved. So far, however, we have spoken simply of a single fan; it remains to see what happens if two fans are put in juxtaposition. If it be desired, a row of these inverted conoids can be built on one

F. S. Ottery St. Mary: Choir

side of a nave, and on the other another row, meeting the first row at their apexes. This leaves a spandrel of unvaulted space between every four fans. The spandrel may be treated in various ways. The simplest is to bridge it over with arched courses of masonry. At Sherborne the ribs of the conoid are not cut short at its semicircular rim, but are allowed to run into the spandrel, with rather a muddling effect. Sometimes a big boss or a pendant occupies the centre of it, or a bell hole is left in it, as at Minster Lovell, Oxon. (338), and Milton Abbas, Dorset (362). Nor again are we restricted to half fans. We can use quarter fans (*quadrants*), if we like, to fill up a corner where there is not room for a half fan; for instance, a small porch may be vaulted with a quadrant in each corner, like Abbot Litchfield's chantry

chapel at Evesham (363). Or if it is a large square space, we may have quadrants in the corners, and half fans in the centre of each wall; this would be a



F. B. Gloucester: Lady Chapel

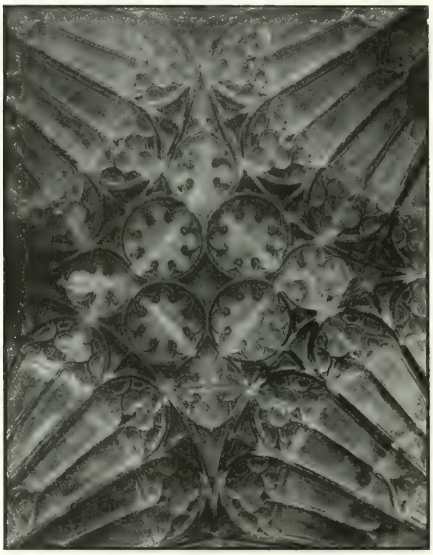
good vault for a bell tower; in the spandrel an aperture being left, if desired, for hauling up bells. If a Chapter house needed a vault, a whole fan could be built

W. T. A.

Gloucester : Lady Chapel from East

on a central pier, and half fans or quadrants put up along the walls, according as it was square or polygonal; similar treatments may be seen in the vaulting of the Dean's chapel and the Angel Tower at Canterbury and the staircase at Christchurch, Oxford.[1]

There seems to have been for some time a considerable amount of distrust of the new vault, at any rate when it had to span a wide space; and the same means were employed to strengthen it which had been devised in 1481-1483 for the lierne vault of the broad Divinity School at Oxford; viz., the building of broad transverse arches crossing the nave under the fans; these were employed in the fan vaults of Henry the Seventh's chapel, Westminster, begun in 1502, in the lierne vault of the choir of Oxford cathedral, *c.* 1505, and in the chapel of King's College, Cambridge, which was not begun till 1512. It had been common to elongate the central bosses of vaults into pendants; but in the vault at Westminster and the two at Oxford, it is a voussoir on each side which is so treated. As a vault, this in Henry the Seventh's chapel is certainly one of the most wonderful pieces of masonry ever put together by the hand of man.

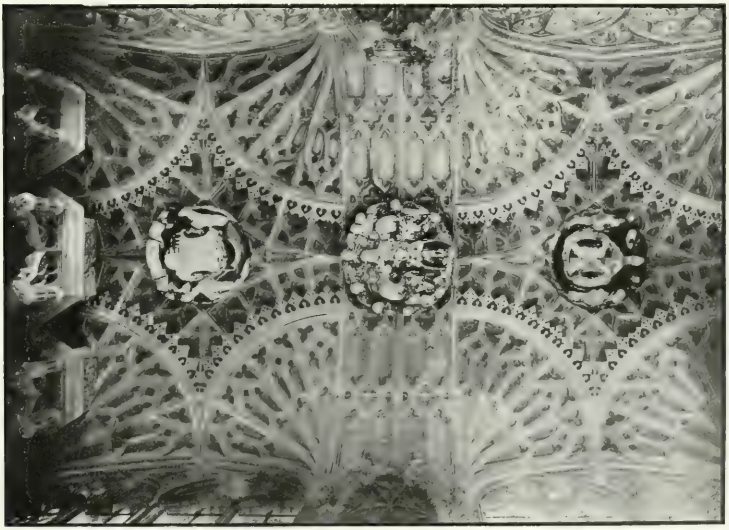


F. B. Gloucester. South Bay of East Cloister

Marvellous is the effect of the great pendants resting or seeming to rest on the unsubstantial air. Following the lines laid down in the choir of Norwich, the Lady chapel of Christchurch, Hampshire, the Divinity School, and the choir of St. Frideswide's, Oxford, the vault is planned as if for a nave separated from aisles by pillars. But no pillars are built to support it. Instead of these, in each of the great arches which cross the nave, and of which only the lower parts are visible, two of the voussoirs are vertical blocks some 8 ft. long with a knob at the end; and supported by this knob the circular courses of the pendants are built up, in the form of inverted concave cones. As for the small central pendants, and those in the aisles (358), each consists of a circular block dropped into a round hole left for the purpose in the vault intermediate between the fans; similar round holes are in the vault of the north-western tower for

[1] Illustrated in *Gothic Architecture in England*, 348.

F. R. P. S. Gloucester Cloister



H. E. M. Christchurch : Salisbury Chantry

hoisting the bells up; but in the latter the hole is covered with a flat lid of wood, whereas these pendants are lids of stone, and each lid projects downward for several feet. In the nave the circular "lid" of the smaller pendants has a diameter of 2 ft. 7 in.[1]

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F. E. Howard's "Fan Vaults," in *Archæological Journal*, lxviii. 1.

[1] The construction of this vault is admirably described in Professor Willis' paper (*Journal of R.I.B.A.*, 1842, 53), on Vaulting, from which the following account is drawn. In mechanical construction it is an advance on all the other great fan vaults; for a great arch is thrown across between each severy or bay, and each principal fan springs from one of the voussoirs of this arch at a considerable distance from the wall. Thus each fan, instead of including, as usual, half the solid of revolution, contains the whole solid, at least at its lower part. There are, however, minor fans which do spring from the wall in the usual fashion, and which meet the complete central fans.

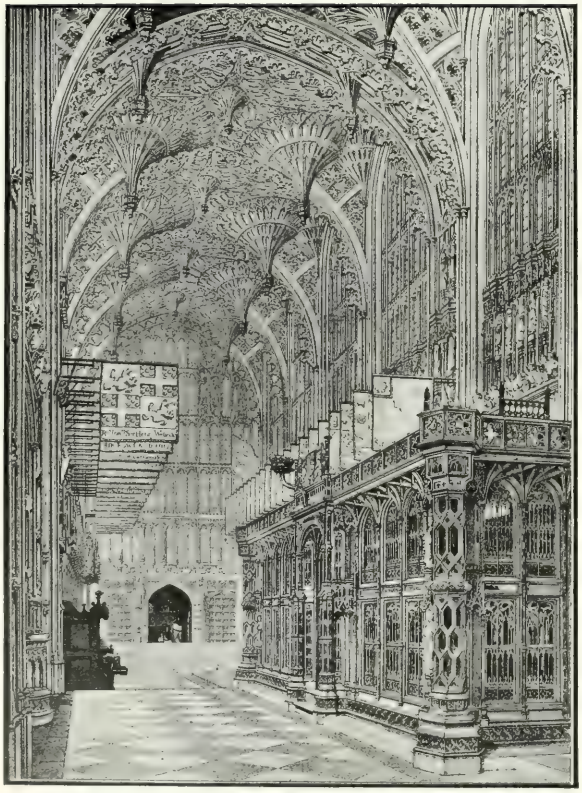
In Figure 1, A B D C is a plan of half a severy (or bay) of the vault; the upper half of the drawing shews its *lower surface* with the ribs and panels, and the lower half shews the *upper surface* of the vault and also the joints. Figure 2 is a *vertical section* through a line C D close to the face of the great arch.

The great arch F E G springs from the walls at F, the joints below F being horizontal in the usual manner, and the portion F *g* lies below the vault and is visible from beneath. A branch arch at H again connects it with the walls; and the space between the walls and these arches is filled up with tracery; which two expedients serve to stiffen the free portion of F E G, and prevent it from giving way by curving inwards between F and *g*. At *g* the arch F E G pierces the surface of the vault, and the upper portion of it, E G, lies above that surface (and therefore out of sight), its position being only marked on the lower surface by a continuation of the hanging cusps which decorate its lower portion, F *g*.

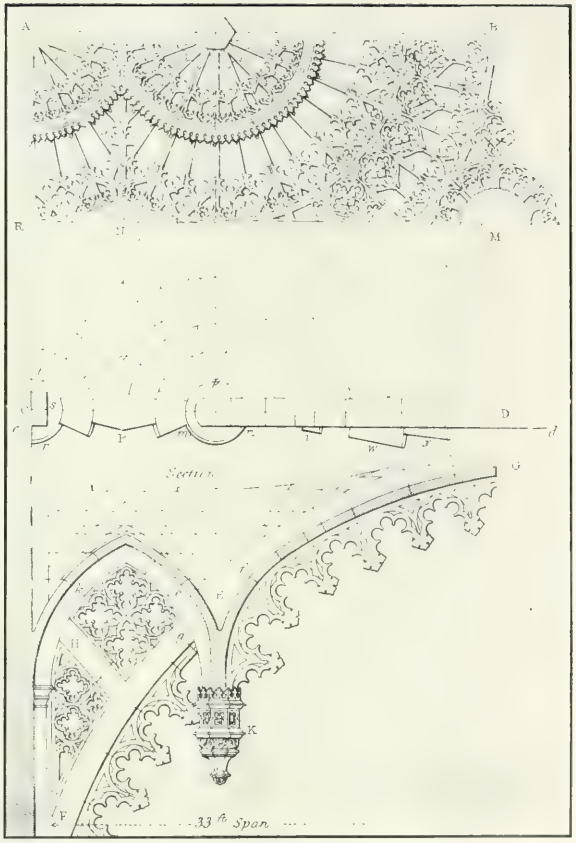
The voussoir E, of which the pendant K is the lower portion, is a very large and long stone; the form of the upper portion of it is marked by the joints, *e*, *f*, and *g*: *f e g* K is one solid block. At *m*, *n*, *p*, Figure 1 shews that there is also a conical surface or bed extending from *e* to *f*, from which the masonry of the principal fan or conoidal vault radiates upward and outwards in all directions until it meets the neighbouring fans along the lines D M, M N, and N P in Figure 1. A fan vault of the same section rises from a conical bed, *r s t*, in Figure 1, formed upon the surface of a stone C, which projects from the wall (Figure 1). This vault meets the neighbouring ones along the lines P N and N R.

The method of filling in the cells—*i.e.*, the interspaces of the ribs—with flat slabs or panels is altogether abandoned in this vault, which is wholly constructed of jointed masonry. This is disposed in concentric rings round the centre of each fan, and the radiating joints are disposed so as to break joint, *i.e.*, so that the joints of one course are opposite to the solids of the next course.

When building, the vault was constructed with the upper surfaces of the blocks perpendicular to the general surface of the vault. When finished, to lighten it, the surfaces of operation were chipped away, and the upper surface reduced, as shewn in Figure 2, to parallelism with the lower; but in one or two places the original surfaces remain, apparently forgotten, and traces may be seen of several others, so that they certainly were employed. Owing to this chipping away of the surfaces of operation the vault is very thin; the panels being but 3 to 4 in. thick, and the principal ribs projecting 8 in. from the panels.



J. F. Henry the Seventh's Chapel, Westminster



R. W. Westminster : Henry the Seventh's Chapel

C. F. M.

Gloucester: North Walk of Cloister and Lavatory

ANALYSIS OF VAULTS

Peterborough: South Aisle of Nave (296). This is a simple quadripartite cross-ribbed vault, of the type illustrated in 370.4; without wall ribs or bosses. To get the diagonal arches, AD, CB, and transverse arches, AB, CD, of the same height, thus obtaining a level ridge, the former are made segmental instead of semicircular, and the latter are slightly stilted (313.2 and 3). The webs are of rubble plastered over. The building of Peterborough nave and its aisles was taken in hand late, and went on from *c.* 1155 to *c.* 1193; the vaults of the eastern aisles of Durham had been set out in 1093.

Hemel Hempstead, Herts.: Chancel (294).—This vault is of similar character to that of Peterborough aisle. The chancel is entered by a horse-shoe arch (431.4). The decoration of the plastered rubble web is modern. The contemporary sacristy on the north side of the chancel also has a cross-ribbed vault. This church appears to have been built in the third quarter of the twelfth century.

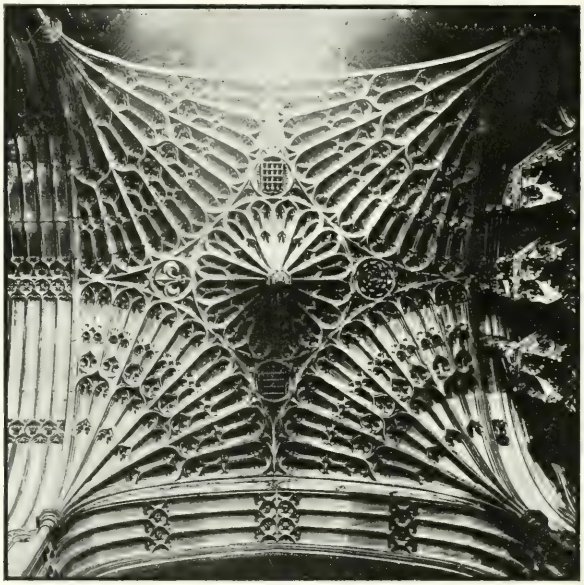
Selby Abbey: Aisle of Nave (294).—This vault is of similar character to that of the aisle of Peterborough. The nave of Selby, like that of Binham priory, was built very slowly; the easternmost bay (736) being probably late eleventh century work, whereas the rest of the nave was building throughout the twelfth century. The transverse arches in the distance are seen to be pointed, as in the high vault of Durham nave; these westernmost bays were not built till quite near the end of the twelfth century.

Durham Cathedral: High Vault of Nave (297).—Canon Greenwell has shewn from documentary evidence that the high vault of Durham nave was built between 1128 and 1133. It will be noticed in the centre of the photograph that corbels had to be inserted into the wall to support the diagonal ribs, no supports having been provided originally; it follows that originally no high vault was contemplated, or at any rate not a vault of the character of the present one. There are no wall ribs or bosses. The web is of rubble plastered over. The diagonal arches are semicircular, the transverse arches (one is seen on the right) are pointed; this is one of the earliest instances of the use of the pointed arch in England. The combination of semicircular diagonal and pointed transverse arches became the favourite and normal framework of early Gothic vaults both in England and the Isle de France. A strange peculiarity in the Durham nave vault is the omission of the alternate transverse arches; *e.g.*, CD in the diagram (370). See also page 316.

Durham Cathedral: High Vault of South Transept (297).—This vault is similar to that of the nave, except that the transverse arches are semicircular; probably both transepts were vaulted between 1104 and 1128. It will be noticed that on the east side of the south transept (seen on the left) vaulting shafts are provided to carry the two diagonal ribs; when this side of the transept was built, therefore, it was intended to have a high vault. When the west side, however, was built, no supports were provided for the diagonal arches, shewing that the intention of vaulting had then been abandoned. Moreover the western clerestory was built as a continuous arcade (traces of this may be seen on the right in the photograph); therefore, when the vault was put up, the clerestory had to be remodelled. In the nave, on the other hand, the clerestory had not been built when it was decided to have a high vault; and when it was built, it was designed to fit into a high vault.

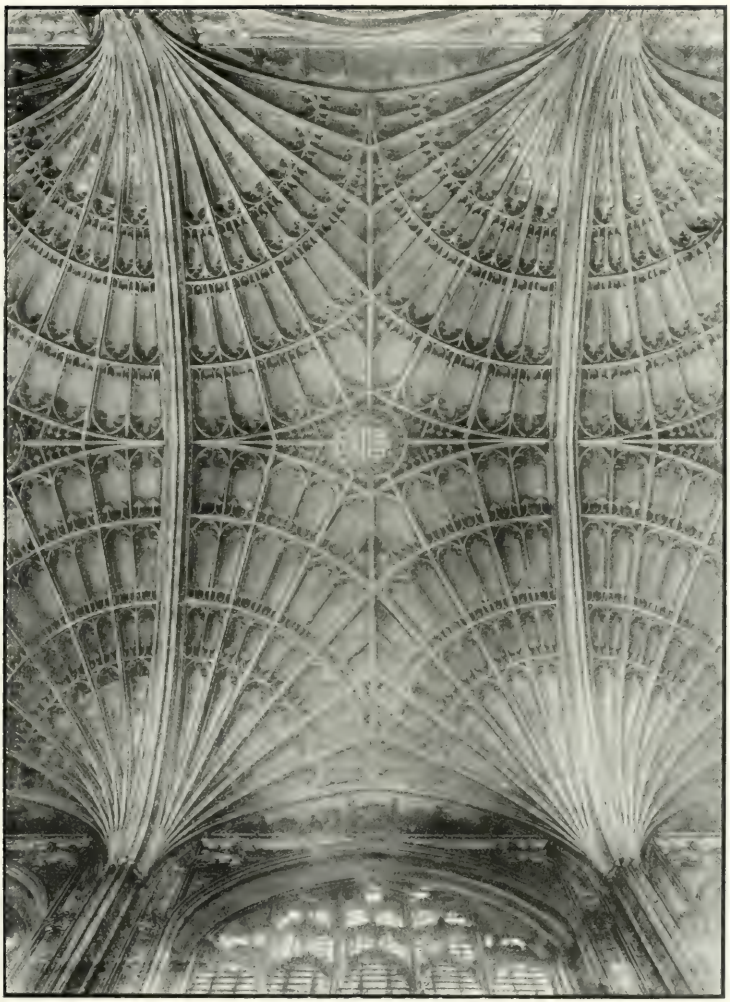
Lessay Nave, Manche (296).—The high vault is of the general character of those of Durham transepts, except that no transverse arches are omitted (370.2). It was not till the western bays

(in the foreground) were built, that it was decided to provide the whole church with high vaults. The broad vaulting shafts in the foreground were built with the vaults of the western bays: those in the distance are afterthoughts. In the diagram two bays in the centre of the nave are shewn: AD, BC, CG, DF are diagonal arches; AB, CD, FG are transverse arches; AC, CF, BD, DG are wall-arches, which, however, as usually in a Romanesque church, are missing. Between A and C, C and F, B and D, D and G will be the clerestory windows. Down below, A, C, F, B, D, G are the pillars of the arcade between the nave and aisles; the arches of this arcade correspond with the wall-arches above.



D. W. Westminster: Queen Elizabeth's Chapel

Diagram (369).—For this instructive diagram and plan we are indebted to *Reason in Architecture* by T. Graham Jackson, R.A. On the right is shewn the plan of three bays of the high vault of a church built in the fashion which prevailed in England in the first half of the thirteenth century. On the left the vault is seen in perspective: in the bay in the foreground only the ribs—the stone "centres" of the vault—have been erected; in the other two bays both web and ribs are built. In the first bay, A is a transverse arch; B is one of the two diagonals which intersect at a central boss. Above each pair of clerestory windows is a wall-arch; on the left, windows, wall and wall-arch are all built; on the right, at E, only the wall-arch; it will be noticed that the latter will only penetrate a short distance into the wall. The diagonal, transverse and wall-arches differ greatly in



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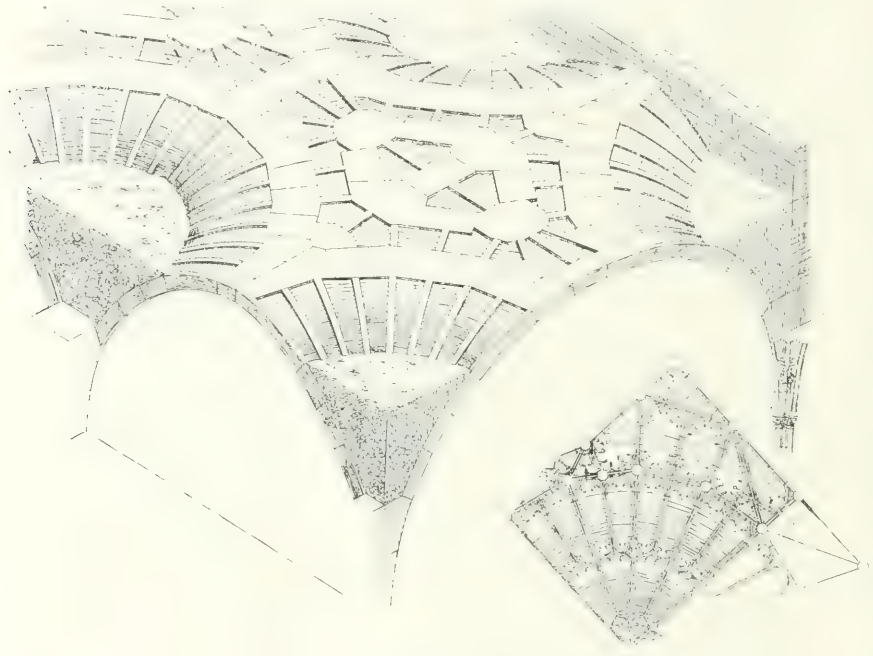
Cambridge : King's College Chapel

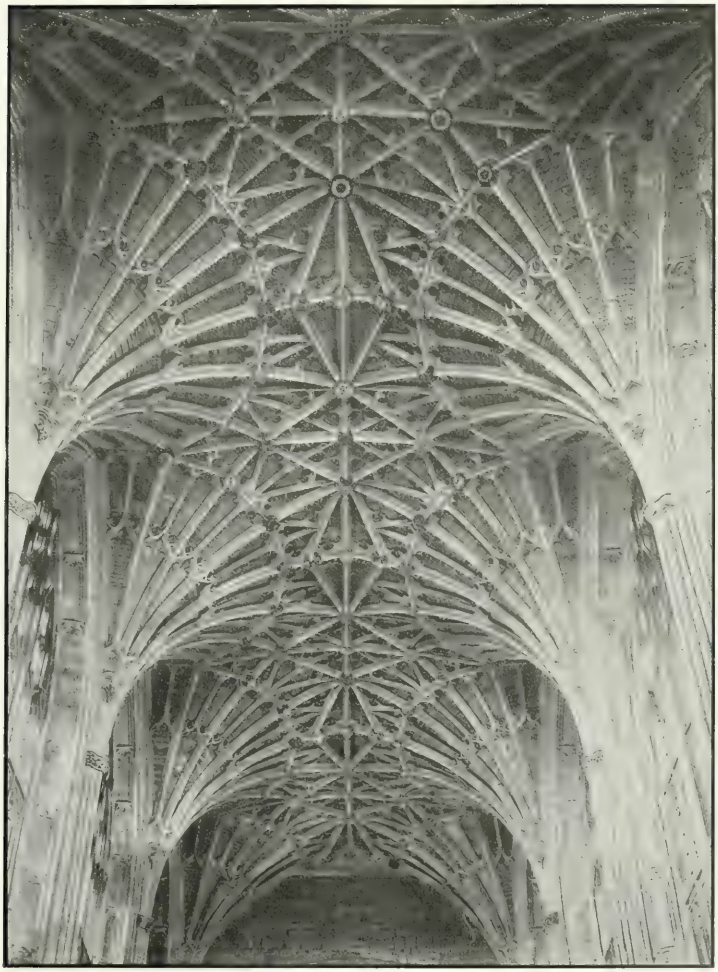
span (as is seen in the plan on the right), but by making the diagonal arch semicircular and pointing the other two, they are all brought to the same height, and consequently the longitudinal ridge of the vault D, and the transverse ridge C, are horizontal and the vault bays are not domical. The webs are of ashlar, and, as the plan shews, the filling in is of the normal English type. Between each pair of clerestory windows, and in a line with a transverse arch of the vault, a flying buttress is built (F in the plan), above the lean-to roof of the aisle. It will be noticed in the foreground (beneath the letter A) that



R. H. C. Sherborne Choir

the lower courses of the ribs are in *tas de charge*. In the distance is seen the lower part of a king-post roof put up to protect the vault from rain and frost, which otherwise would soon disintegrate it. Owing to the presence of the stone vault, all the roofs of the church might be burnt off without the flames reaching the church below. At the top of the clerestory wall is a gutter to take the drainage of the roof; on the left it has been provided with a parapet.

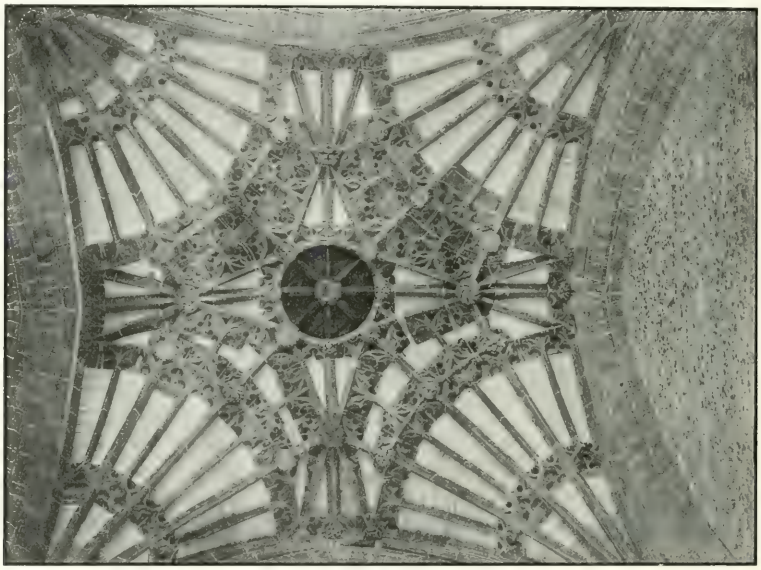
Boxgrove Chancel, Sussex (370).—This Benedictine chancel is vaulted throughout in squares, probably because squares are easier to vault than oblongs. To each large square in the high vault there are two small squares in the low vaults (3). In the other diagram



F. H. C. Sherborne Nave

(4) it will be seen that one side of the low vault rests on the aisle wall ACG, and the other on the piers B, D, H, and that the pier D is less massive than B and H. This is because B and H on the side next the nave have to carry the diagonal and transverse ribs of the high vault, whereas on this side D does not carry anything.

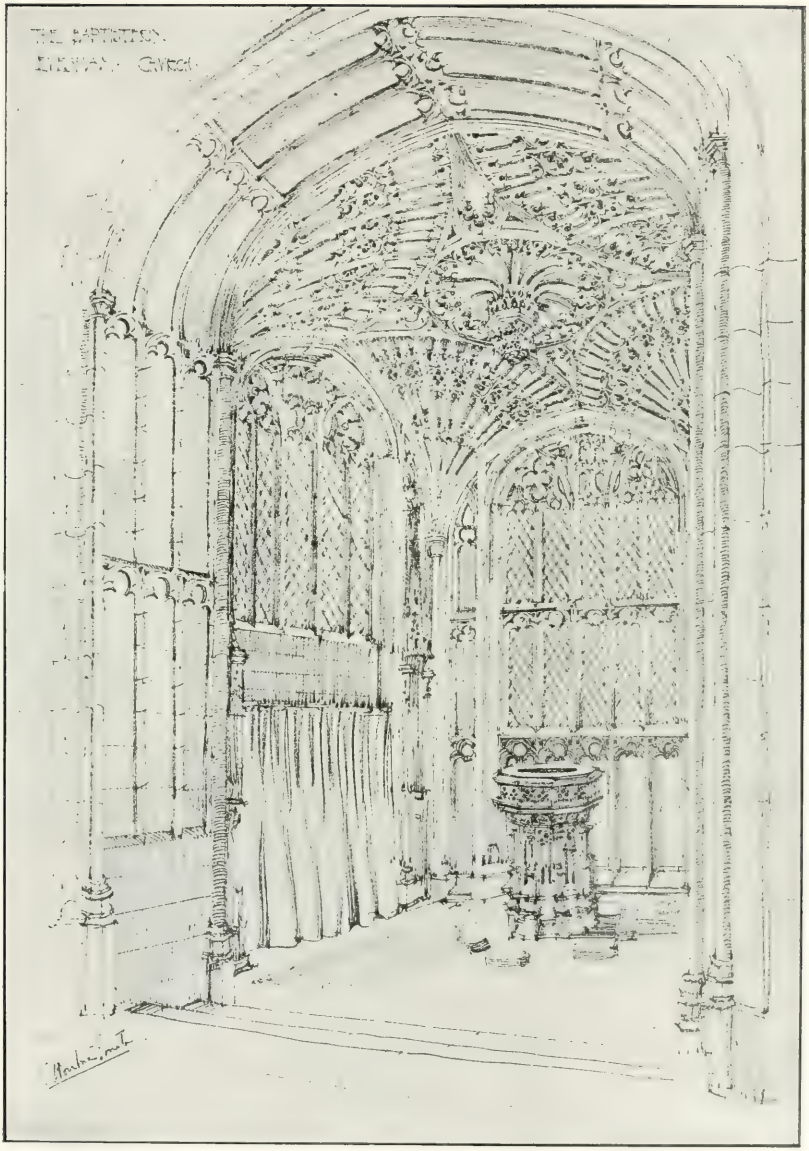
Notice also that in the high vault HBKL (299) there are both wall-arches HB and LK, and a boss E, and that all the ribs are much lighter than those of the Norman builders. The transverse arches HL and BK are more massive than the diagonals BL and HK, and those than the wall-arches HB and LK (304). The transverse and wall-arches are pointed, the diagonals semicircular. The plastered web of the vault is decorated with coloured scroll-



E. H. C. Milton Abbas : Tower

work similar to that of the vault of Chichester Lady chapel, where the work was done by T. Bernardi in 1519. The arches between the nave and aisles and those of the clerestory windows are pointed, but the arches of the coupled bays of the pier-arcade are semicircular and not pointed, so as not to raise the elevation too high (769). The presence of the semicircular arches makes it impossible to have a triforium arcade ; the triforium chamber therefore is a blindstory ; no sign of it is to be seen either internally or externally (41). The design of Boxgrove chancel is as beautiful as it is exceptional. With the widely separated shafts of the piers may be compared those of Chichester retro-choir, which was commenced after the fire of 1186 (484 and 749).

Portsmouth, St. Thomas (301).—This is the only other church in which the Boxgrove



St Lawrence, Evesham

design appears. It is known that in 1180 Austin Canons were granted a site in Portsea, on which "to erect a chapel in honour of the glorious Martyr, Thomas, former Archbishop of Canterbury"; and that before 1189 Toclyve, Bishop of Winchester, confirmed to them this chapel "which they had begun to build." The church was therefore commenced after 1180 and before 1189, and the present chancel, unless it was rebuilt soon afterwards,

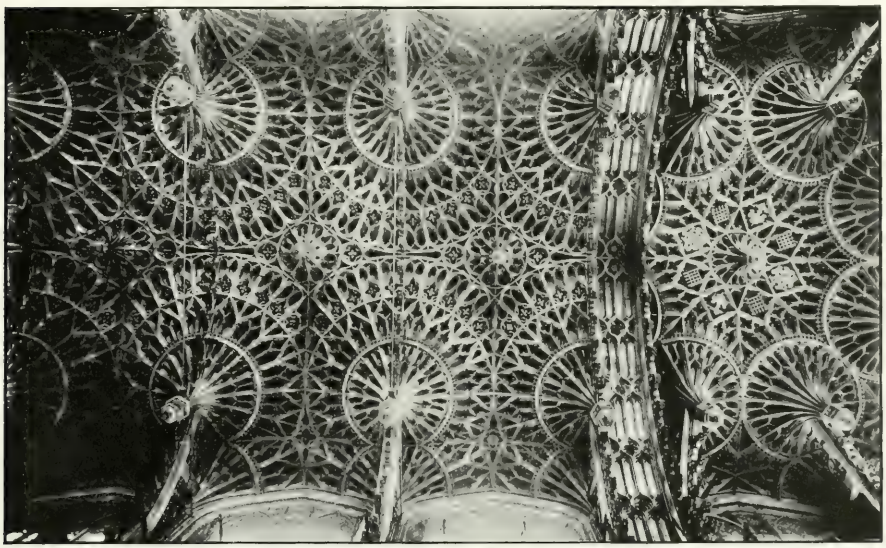
F. H. C. Cullompton

is contemporary with the Chichester retro-choir. Boxgrove chancel can hardly be placed earlier than the second decade of the thirteenth century, and it is therefore more likely that it is modelled on St. Thomas, Portsmouth, than vice versa.

Winchester, St. Cross: West Bay of the Chancel 299. This is another quadripartite vault, with wall ribs. The transverse arches are much more massive than the diagonals, and those than the wall ribs. The transverse arches as well as the diagonals are

semicircular; the result is that the vault rises considerably higher at the centre than at the sides (168). The webs are composed of ashlar—an early example of it. The courses of the web finish parallel to the ridges, in French fashion. The decoration of the webs is modern; the height of the solid springers is shewn by a difference of colour. In the eastern bay of the chancel vault there is a central rib descending between two windows, as in Southwell chancel (401). Shafting of Purbeck marble is used freely in this chancel, *c.* 1165, and then in 1175 in the chancel of Canterbury cathedral.

Beverley Minster: the Choir (300).—This is another simple quadripartite vault (370.2).



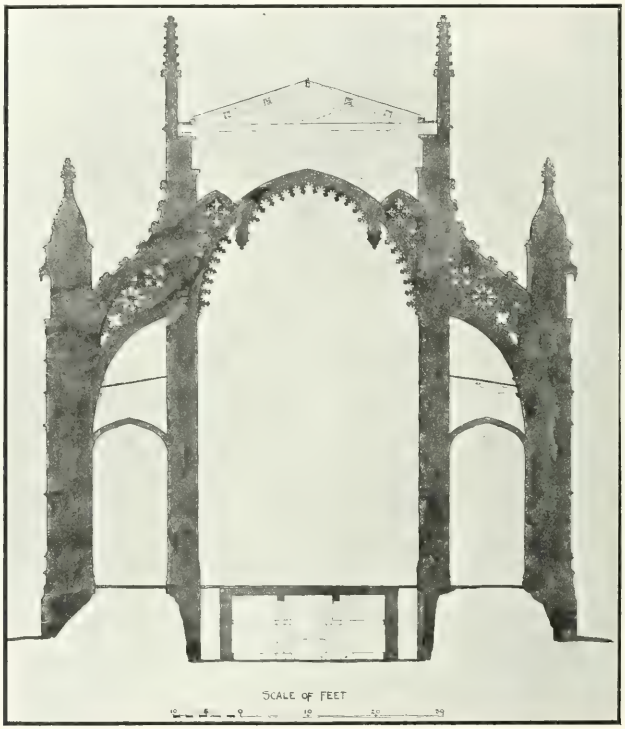
D. W. Westminster: Henry the Seventh's Chapel

Here, as at Durham, the bays of the high vault are markedly oblong: the bay of each side aisle being approximately square, and the corresponding bay of the central aisle being composed of two such squares. There are transverse arches, AB, CD, and diagonals, AD, BC, and the transverse arches, unlike those of St. Cross, are not more massive than the diagonals. There are bosses at E and wall ribs AC, BD; the web is plastered over. The vaulting shafts rise unusually high; A, C, B, D; in other words, the vault springs at an unusually high level; and in order not to get the transverse arches, and with them the whole vault, too high, they are not true pointed arches, but, like the pier-arches of Westminster abbey, are made slightly vertical at the spring; *i.e.*, they are four-centered (437). The date of this vault is probably *c.* 1235; making it contemporaneous with the vaults of Salisbury, but earlier than the high vaults of Lincoln Minster.

St. Saviour's, Southwark: the Chancel (290).—This vault resembles in most respects

the choir vault of Beverley minster (300); but the web is of ashlar, like that of St. Cross. In the latter the web is filled in, French fashion, with courses parallel to the ridges; in the Southwark vault the courses are not quite parallel to the ridges. The vault springs lower down than at Beverley; viz., at the sill of the clerestory, thereby blocking out much light. This chancel was built between 1213 and 1238.

Westminster: Procession Path (302).—This is a simple quadripartite vault applied to



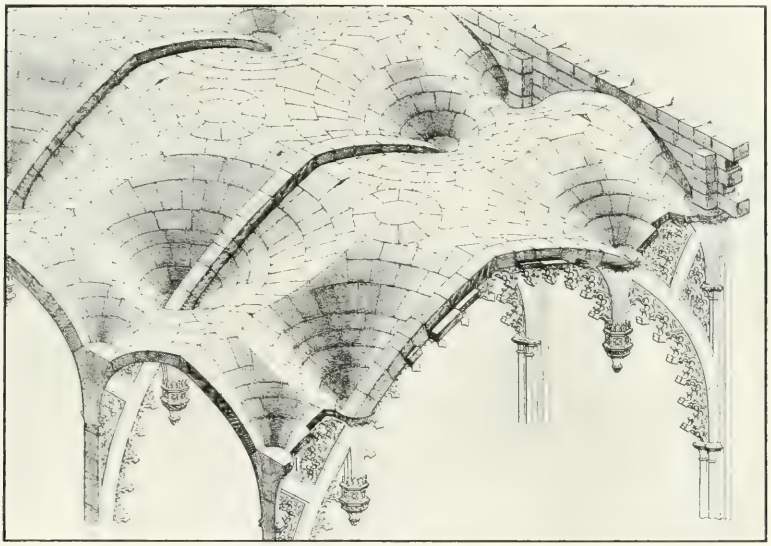
L. N. C. Section of Henry the Seventh's Chapel

a bay in which the four outer arches are of three different lengths; by the use of pointed arches these and the diagonal arches are made to rise to the same height and level ridges are obtained. The filling in of the web is of the English type.

Westminster Abbey: the Presbytery (314).—In the diagram, 370.5, the vault is quadripartite; AB and CD are transverse arches, AC and BD wall-arches, AD and BC diagonals intersecting at the boss E, and FG is a ridge rib following the direction of the axis

of the church from the apex of one transverse arch to that of the others; what is called a longitudinal or an axial ridge rib. At Westminster this ridge rib is seen running westward up to the crossing of the church. Over the clerestory windows there are wall ribs, and the transverse arches also have bosses at their intersection with the ridge rib. The vault springs high up in the clerestory, as at Beverley (776). The filling in of the web is of ashlar, and by interspersing courses of dark Reigate stone the non-parallelism of the courses with the ridges is emphasised; evidently the English masons were not ashamed of their method of web construction, but took a pride in it. This part of Westminster abbey was commenced in 1245.[1]

Lincoln Minster: the Southern Bay of the South-East Transept 315).—This bay was



R. W. Henry the Seventh's Chapel, Westminster

probably reconstructed by Bishop Grosseteste between 1237 and 1253. Here also there is a longitudinal ridge rib. The webs are of rubble.

Ripon Minster: East Aisle of North Transept (315).—In the diagram, 370.6, the vault is quadripartite, AB and CD are transverse arches, AC and BD wall-arches, AD and BC diagonals intersecting at the central boss E. FG is the longitudinal and HI a transverse ridge rib. The Ripon vault is quite *sui generis*. The great breadth of the transverse arches, the use of the French method of filling in, the fact that ridge ribs are employed though the courses are parallel to the ridge, and that these ridge ribs are too

[1] The diagram should be oblong, not square, as referring to Westminster, but square as referring to the following vault at Lincoln.

slender to be of any but decorative use, suggest that the source of this vault is to be found in France; not, however, in the Ile de France, but in such churches as those of St. Serge, Angers (289), and Poitiers cathedral; this is the characteristic type of vault throughout the ancient English provinces of which Angers was the capital. One would have expected *a priori* to find many traces of English Gothic in the south-west of France, and of Angevin, or what the French call Plantagenet Gothic, in England; but, with the possible exception of this Ripon vault, they seem to be non-existent.

Malvern Priory: South Aisle of Choir (316).—This is another quadripartite vault with ridge ribs. The skeleton of the vault is the same as at Ripon (315), and it is filled in with courses of ashlar parallel to the ridges. The axial ridge rib is horizontal, but the side cells are tilted up to get more headway for windows and pier-arches. The ribs are not molded, but merely chamfered; these "knife-edge" ribs are common in late work. The chancel of Malvern priory was reopened, after remodelling, in 1460. A vault of similar framework is seen at Oxford over the Latin chapel in the cathedral (81).

Westminster Abbey: Vault of the Apse (314).—This is a variant of the simple quadripartite vault to the west. By simply altering the position of the central boss, six equidistant ribs are enabled to descend between the windows, dividing the vault-bay into six cells.

Westminster Abbey: St. Edmund's Chapel (302).—In similar fashion the vault of St. Edmund's chapel is divided by six ribs into six cells. (The horizontal rib on the left is a ridge rib.) Here also the English method of web construction is adopted.

Lincoln Minster: Central Transept.—In the diagram (291.3) BC and DA are diagonals intersecting at E. AB and CD are transverse arches spanning the church; parallel to these is an intermediate arch FG which also spans the church. AF, FC and BG, GD are wall-arches, beneath each of which is a lancet window. The addition of the intermediate arch FG increases the cells of the bay to six, and therefore there are also six ridges, all shewn as RE. The outer arches are pointed, but they do not rise so high as BC, DA and FG; the result is that the bay is higher at the centre than at the sides, *i.e.*, is domical, and the ridges are not horizontal, but on the curve.

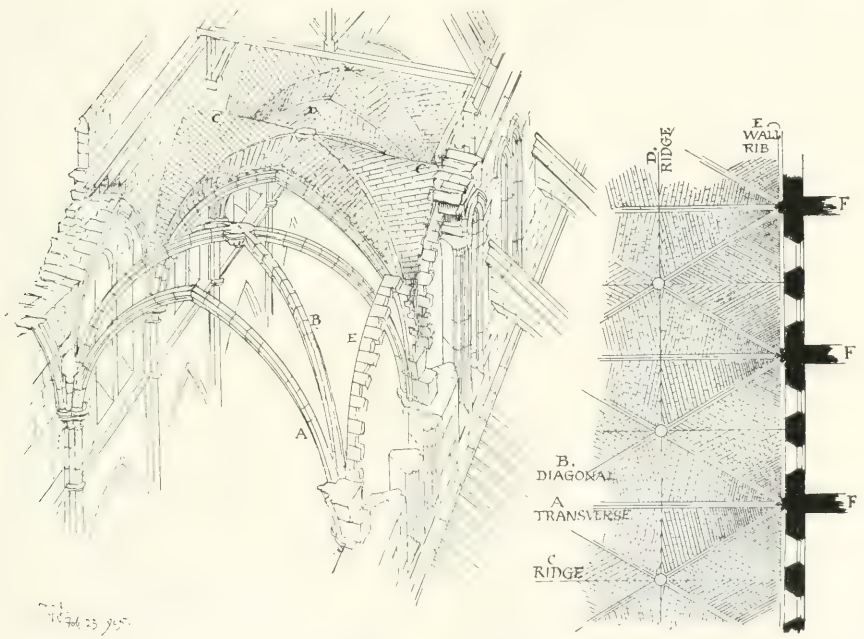
The two Lincoln vaults differ from the diagram in having an axial ridge rib springing from R, the apex of the transverse arch CD, which rises to E and then descends to R, the apex of the transverse arch AB.

In the central transept of Lincoln (303) the bays are markedly oblong, and the new intermediate ribs pass down between a pair of clerestory windows. The web is of rubble, plastered over. In each bay there are six cells and six ribs, and, in addition, an axial ridge rib. There are wall ribs on one side, but none on the other: evidence of a change of intention as to vaulting: *cf.* Durham transept (297).

Lincoln: South-Eastern Transept (303).—The two northern bays of this transept have sexpartite vaulting. The filling is of rubble plastered over. There is no ridge rib, nor any wall ribs. It is probable that these vaults were erected after the vault of the central tower fell in 1237. Sexpartite vaults are particularly well suited for clerestories in which there are two windows in each bay; when there are three windows, as in Lincoln choir (584), the sexpartite framework is inapplicable, as it would bring the intermediate rib on to the glass of the central window. It should be noticed (370.5) that a sexpartite vault and such a one as that of Westminster presbytery are identical in plan. But in the former FEG is a horizontal ridge rib; in the latter it is an arch parallel to the transverse arches; in the latter vault there are four cells, in the former only four.

Beverley Minster: the Crossing (317).—The following eight vaults are still quadripartite, for they contain only four cells in each bay; but as they contain ridge ribs and tiercerons as well as diagonals, they may be termed "complex quadripartite vaults," as also may those described above which contain ridge ribs but no tiercerons. In the diagram (373) AB, CD as well as AC, BD are transverse arches, AD, BC are diagonal arches, E is a bell-hole, FG is an axial and HI a transverse ridge rib, AJ, JC, CK, KD, DL, LB, BM, MA are tiercerons. The bay of the Beverley vault, being over the crossing, is square.

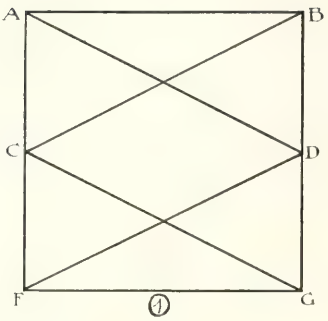
Lincoln Minster: the Nave (39).—In the diagram (373) AJ, JB, BI, ID, DK, KC, CH

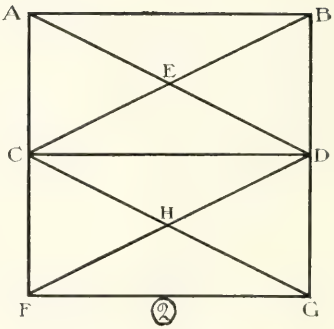


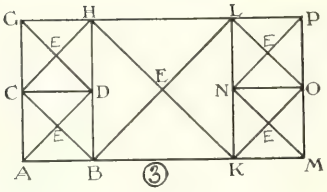
HA are tiercerons; FG is an axial ridge rib; the transverse ridge rib HI is cut short at H and I because the side cells are sloped up to give increased height to the clerestory windows. The vault springs rather low, some distance beneath the sill of the clerestory; the result is that the lateral windows of each clerestory bay are partially obstructed and the lighting of the nave impaired: contrast the high spring of the vaults of Beverley (776) and Westminster (314). The webbing is of rubble plastered over. The vault of Lincoln nave[1] may be *c.* 1250.

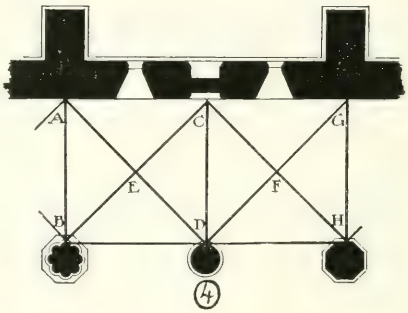
Lincoln Minster: the Retro-choir (320).—The only difference in the diagram (373) is that the side cells are divested both of tiercerons and transverse ridge ribs, the side cells being

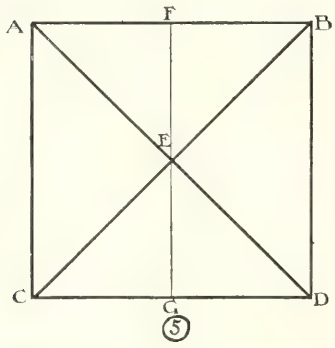
[1] This vault is illustrated in *Gothic Architecture in England*, 327.

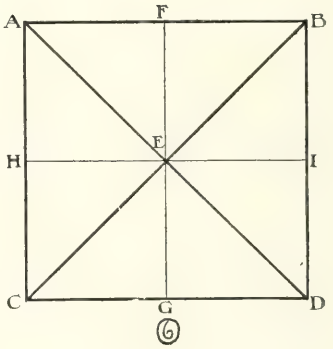












W. E.

1. Durham Nave
2. Lessay
3. Boxgrove Chancel
4. Boxgrove Aisle
5. Westminster Presbytery
6. Malvern Aisle

tilted up sharply The web is of rubble, from which the plaster was stripped at a recent "restoration." The Lincoln retro-choir was finished *c.* 1280 (784).

Norwich Cathedral: the Cloister (323).—The drawing shews a whole bay on the right, and half a bay on the left. The bay is square, and the framework is the same as in diagram 373.1 of the Beverley crossing. But in this vault, the span is so small and the various ribs so close set that it has been found unnecessary to construct the webs any longer either in rubble or ashlar; in most cases a single flat slab or panel is sufficient to bridge over the space from rib to rib. Bosses are employed at the intersections of the ridge ribs with the outer arches and tiercerons. This part of the cloister was built in the fourteenth century.

Morton Church, Lincolnshire: Vault of the Tower (319).—This again is similar in framework to the vault of the Beverley crossing (373). A charming effect is gained by the cuspation of the ridge ribs and bell-hole; this points to a late date for the vault. The cells are filled in with rubble. The ribs terminate below as at Minster Lovell (338).

Warwick St. Mary: the Chancel (326).—This is of the same type as the tower vault of Beverley minster (373); but there are skeleton diagonals and skeleton transverse ribs in addition to those occupying the normal position. This vault is of rib and panel construction; which fact, together with the "knife-edge" ribs, points to a late date. The chancel was built between 1381 and 1391; but from the resemblances of the vault to that of the Beauchamp chapel, it is likely to be of the date of the latter, 1439.

Lincoln Minster: Central Tower (331).—At first sight this vault appears to consist of four square bays, AFEH, HEGC, EIDG, FBIE, each of the type shewn in diagram 373.1 and at Beverley in the crossing (317). But at Beverley the diagonals and tiercerons terminate at a much lower level than that of the bell-hole. At Lincoln, on the other hand, taking the bay HEGC as a sample, the diagonal CRE, after rising to R, does not sink, but goes on *rising* to E, which is at a much higher level than either R or C; so also the ribs NE, JE, ME, QE, do not sink but rise to E. The same is the case with the vault of the Consistory Court,[1] except that this possesses neither ridge ribs nor tiercerons. The latter design occurs also in the Morning Prayer chapel, except that the latter has a central pier, down to which the inner ribs descend as if it were a square Chapter house (304). The vault of the central tower was not put up till late in the fourteenth century. The arches and the arcading of the tower are of the time of Bishop Grosseteste, 1237-1253. There are no wall ribs, which shews that the Bishop did not contemplate vaulting his tower. The photograph shews that the central boss of the latter is very large and that there is a bell-hole in one corner.

Exeter Cathedral: the Nave (329).—This is perhaps the most complex specimen of a quadripartite vault; it is also the finest of its type in existence. In the diagram (373) AB, CD are transverse arches, AC, BD are wall arches, AD, BC are diagonals and E the central boss; in each side cell there is room for three pairs of tiercerons, AL, LC, AN, NC, AP, PC, and again BM, MD, BO, OD, BQ, QD. In the eastern and western cells there is only one pair of tiercerons; AJ, JB, and CK, KD. FG is an axial and HI a transverse ridge rib; the apexes of the clerestory windows are beneath H and I. It will be seen that at the point C between any two bays there spring up to the two ridges the wall rib CH, the tiercerons CL, CN, CP, the diagonal CE, the tierceron CK, the transverse rib CG, the tierceron CW, the diagonal CV, the tiercerons CU, CT, CS, and the wall rib CR; a total of thirteen ribs. Now some of these are long and some are short; and as they all rise from the same level (the top of the vaulting shaft) and to the same level (a horizontal ridge), it follows that they must vary greatly in

[1] Illustrated in *Gothic Architecture in England*, 328.

curvature. The spring of the vaults is low, with the result of blocking the clerestory windows when seen in perspective. The vaults of Exeter cathedral seem to have been set out *c.* 1270.

Westminster Abbey: the Chapter House (333).—This is octagonal, and is spanned by eight transverse arches springing from vaulting shafts between the windows, HE, GE, FE, etc. (373). From the same vaulting shafts a pair of tiercerons, H*h*, G*h*; G*g*, F*g*; F*f*, E*f*; etc., springs above each window to the ridge. From the intersection of these tiercerons, which is marked by a boss, ribs descend to the central pier, *h*E, *g*E, *f*E, etc. The webs are built up in English fashion, and bands of Reigate stone are interspersed. There are no ridge ribs.

Lincoln Minster: Chapter House (335).—At Lincoln the Chapter house has ten sides, and ten transverse arches rise from A, a foliated corbel, to the ridge R, and then descend on to the central pier E, dividing the vault into ten bays (373). In each of the ten bays there are two pairs of tiercerons, AC, AC, AD, AD. An intermediate rib rises from C to D, and then descends to E. There are twenty ridge ribs, RD, RD, etc. The effect of the twenty ribs rising from E and then drooping like the branches of a palm tree is exceedingly happy. This vault is supposed to have been built with the Chapter house, *c.* 1230; but it is hardly likely that it is earlier than the simpler design of the Westminster vault, which was not built till *c.* 1253. The Chapter house itself at Lincoln[1] was no doubt built *c.* 1230, and was not intended for a stone vault: as is clearly seen in the ruthless way in which the corbels of the vault cut into the beautiful arcading of the walls (861). When the present stone vault was inserted, it thrust out the buttresses, and early in the fourteenth century they had to be reinforced by the present flying buttresses, most of the thirteenth-century buttresses being at the same time capped with heavier pinnacles (148).

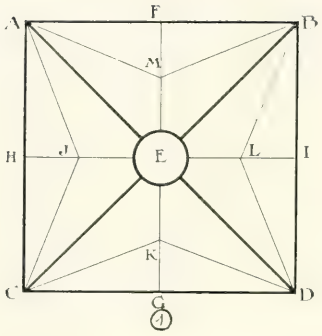
Worcester Cathedral: the Cloister (337).—The vaults of Exeter represent the perfected form of the tierceron vault; the next group of examples illustrates the addition of lierne ribs; the latter are indicated in the diagrams by dotted lines, the diagonals, transverse arches and wall ribs by thick lines, the ridge ribs and tiercerons by thin lines: in all of them AB and CD are transverse arches, AD and BC are diagonals, AC and BD are wall arches, below which, in the case of a high vault, are clerestory windows. In the vault of Worcester cloister liernes connect the ridge ribs and diagonals at points equidistant from the central boss E, forming an octagonal pattern (375). As in Norwich cloister, the vault is of the rib and panel type. The side cells are tilted up. There are bosses of remarkable beauty, especially in the north walk, on which are carved scenes from the life of Our Lady; in the central boss of the bay illustrated is represented the Coronation of the Blessed Virgin, while on the encircling bosses are adoring angels (337). This cloister was rebuilt and glazed *c.* 1372.

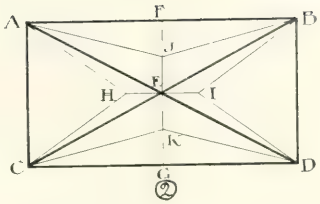
Canterbury Cathedral: Black Prince's Chantry Chapel (336).—This is a similar vault to that of Worcester cloister; but the ridge ribs bifurcate at the extremities. On the central boss is the Pelican in piety. This chantry was founded in 1363. Similar is the high vault of the nave, begun 1379-1381.

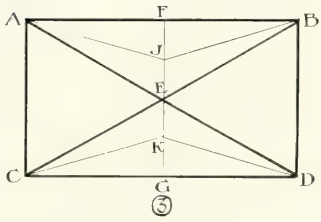
Ely Cathedral: North Aisle of the Choir (375).—In this vault, as in the Black Prince's chapel at Canterbury, there is an octagonal centrepiece of liernes, and the ridge ribs bifurcate at the base. The rebuilding of Ely choir with its aisles started soon after the Norman choir and aisles were destroyed by the fall of the central tower in 1322.

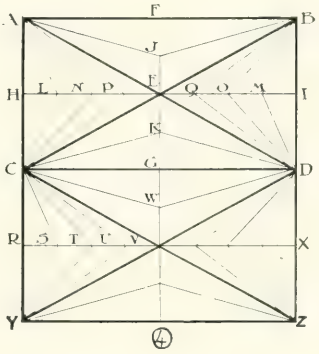
Ely Cathedral: High Vault of the Choir (375).—This vault contains two pairs of tiercerons, AH, HC; AJ, JC; BI, ID; BK, KD; in each side cell, but none in the eastern and western

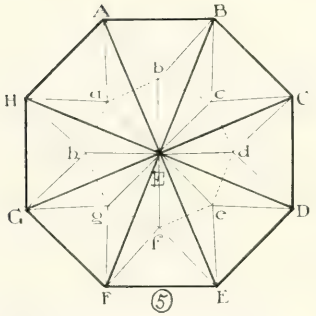
[1] The plan in *Gothic Architecture in England*, 325.1, and 340 is incorrectly drawn.

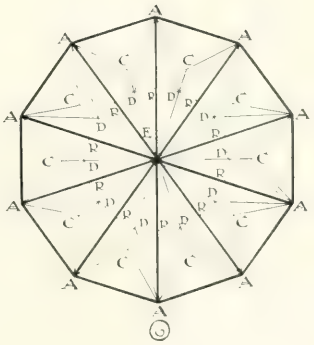












W. E.

1. Beverley Central Tower
2. Lincoln Nave
3. Lincoln Retro-choir
4. Exeter
5. Westminster Chapter House
6. Lincoln Chapter House

cells (750). The centrepiece consists of a twelve-sided stellar pattern; four of the radii of the star are continued on to the transverse arches. This is an early example of Stellar vaulting.[1]

Woolpit Church, Suffolk: Vault of Porch (338).—In each of the four cells are two pairs of tiercerons, CK, KD; CV, VD; DL, LB; DW, WB; etc. (375). The liernes form a centrepiece, viz., a star with sixteen sides. This is a very successful example of a Stellar vault. From the "knife-edge" ribs and the Tudor roses it would appear that the vault is not earlier than the latter part of the fifteenth century.

Minster Lovell, Oxon: Vault of Tower (338).—In this late vault there is but one pair of tiercerons in each cell, and the ridge ribs bifurcate at their inner ends, J, K, L, M, into an octagonal centrepiece. In the centre is a bell-hole. The webs are filled in with rubble. The bottom ends of the tiercerons are bifurcated in a pretty fashion, as there is not room for them at the junction of the diagonals and outer arches at A, B, C, D. This vault is of great interest; for though we have described it above as a quadripartite vault with ridge ribs and tiercerons, it might with equal propriety be termed a fan vault; for the latter is defined as one which has equidistant ribs identical in curve. Such a design shews that the transition from the tierceron to the fan vault was inevitable; nevertheless this transition, with a few isolated exceptions, took place nowhere but in England (375).

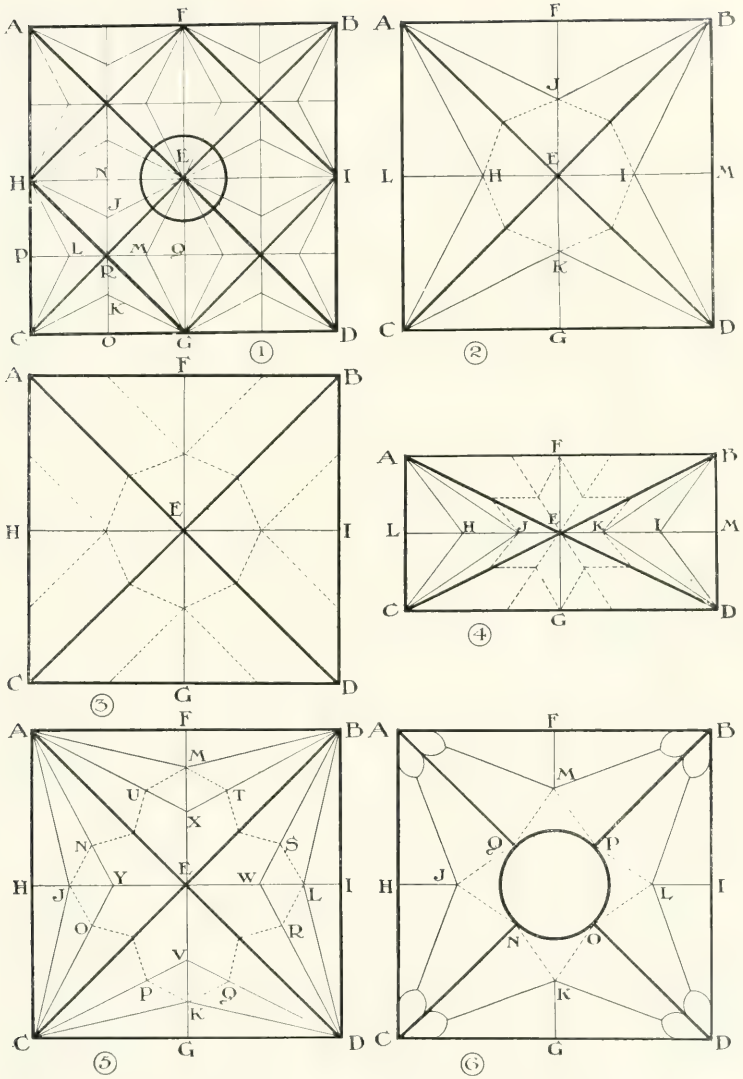
Christchurch Priory, Hants: Vault of Presbytery (339).—This stellar vault has truncated ridge ribs, HI, FG, and a pair of truncated tiercerons in each cell (377). The centrepiece is a large star with sixteen sides. In addition four lozenge-shaped patterns are obtained by the addition of the liernes LG, GM; NI, IO; PF, FQ; JH, HK. The result is not particularly pleasing when seen in perspective. The most curious thing about the vault is that it does not spring from the vaulting shaft on the face of the wall, but from a voussoir at some little distance from the wall. This voussoir is elongated downward to form a pendant. The result of abandoning the normal position of the spring of the vault is first, that the span of the vault is reduced, and, secondly, that its thrust is brought down more vertically. A somewhat similar device occurs in the high vault of the chancel of Norwich cathedral, and in a highly developed form in the vaults of the Divinity School, Oxford (343), the chancel of Oxford cathedral (344), and Henry the Seventh's chapel, Westminster (366).

Warwick St. Mary: Beauchamp Chapel (342).—This is another fine specimen of a stellar vault. There are truncated tiercerons, *e.g.*, CJ, DK, DL, MB, and each half of each ridge, rib is split in two by a little hexagon with concave sides; this is a substitute for a boss; a similar hexagon occupies the centre of the vault. The centrepiece consists of a large sixteen-sided star of liernes; in this is inscribed an octagon, also of liernes (377). This chapel was begun in 1439.

Cricklade Church, Wilts.: Vault of Tower (376).—The diagram (377) shews a pair of diagonals AD, BC, and ridge ribs FG, HI, unbroken except by the bell-hole. In the cell CED there is one complete pair of tiercerons, CK, DK, and two incomplete pairs, NR, OR and PS, QS, which bifurcate at the base. The remaining three cells, DEB, BEA and AEC, are ribbed in the same way. The rest of the ribs are liernes forming a sixteen-sided star, from each arm of which depend four lozenge-shaped patterns.

Tewkesbury Abbey: Central Tower (341).—Here the ribbing consists almost wholly of liernes, the only other ribs being the diagonals, ridge ribs, and one pair of tiercerons in each cell. The centrepiece consists of a four-petalled star encircling an octagon and inscribed in

[1] This vault is illustrated in *Gothic Architecture in England*, 329.



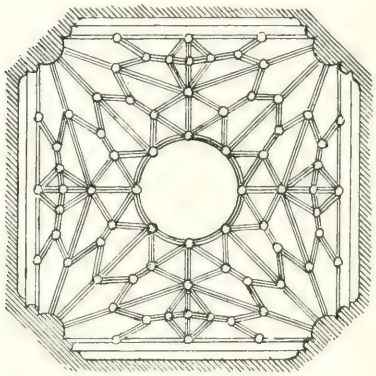
W E

1. Lincoln Central Tower
2. Worcester Cloister
3. Ely : North Aisle
4. Ely Choir
5. Woolpit
6. Minster Lovell

a larger octagon, which is again inscribed in three squares. This vault contains the arms of Sir Guy de Brien, who died in 1390.

Tewkesbury Abbey: the Presbytery (341).—This is one of the most complicated and certainly one of the most beautiful of our stellar vaults. In each bay the centrepiece is a large star with twelve or more trefoiled petals, and between the stars is an octagon. Tewkesbury chancel is said to have been remodelled in the time of Abbot Parker, 1389-1421; it is likely, however, that much of the work had been done previously at the cost of Lady Elizabeth Despencer, who died in 1359 (340).

Oxford Cathedral: the Chancel (344 and 347).—Of all vaults lierne vaults are the most beautiful, and of all lierne vaults stellar vaults, and of stellar vaults this is the queen; it may be doubted if there is another vault so poetic and delightsome in Christendom. Yet, as the diagram shews, it is far from the complex tangles of the vaults of Tewkesbury and Gloucester. To bring it to a square, the sides of the bay are ceiled separately with segmental tunnel vaults. In the central square are two diagonals, two ridge ribs, and a pair of tiercerons in each cell, CM, DM, DK, BK, BL, AL, AJ, CJ. The centrepiece consists of a sixteen-sided star with eight petals. This is inscribed in an octagon, to the cardinal points of which are attached four hexagonal patterns bifurcating at the base. At the points A, C, B, D on the transverse arches are magnificent pendants (311). The date of this vault is *c.* 1500.

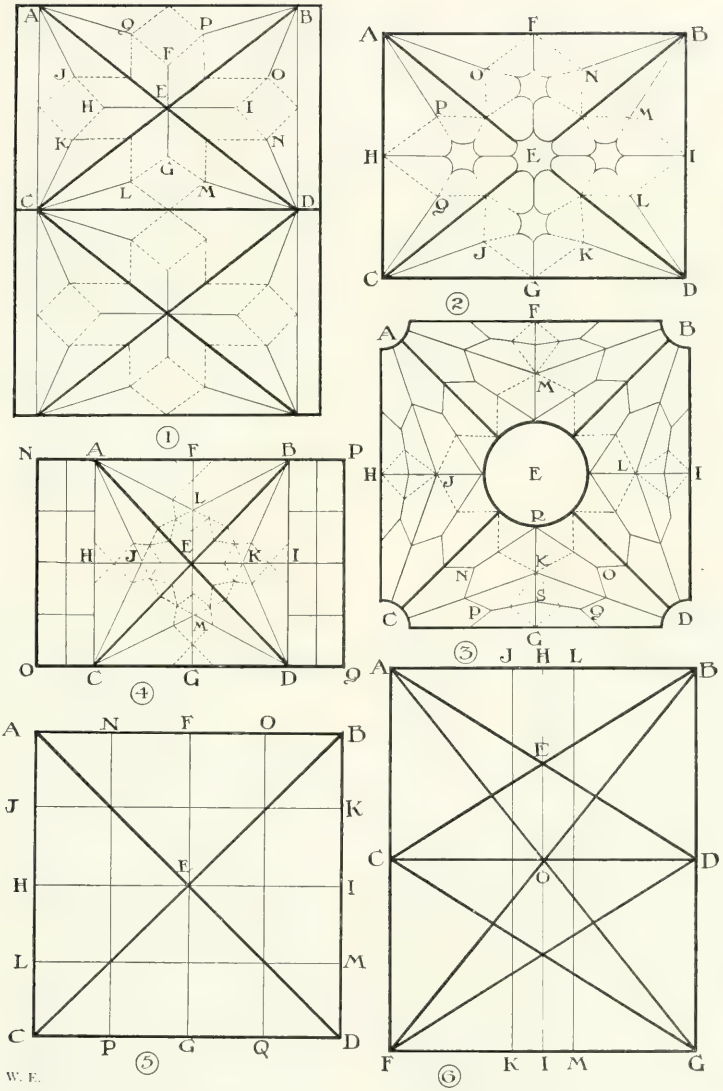


J. H. E. Cricklade Tower

Worcester Cathedral: South Aisle of the Nave (377).—This is a vault set out symmetrically on paper, regardless of how it will look on the curved surfaces of a vault. There are no tiercerons or liernes. AD, BC are diagonals, and FG, HI ridge ribs. In addition there are NP, OQ parallel to FG, and JK, LM parallel to HI; perhaps we may christen these "*flanking ribs*."

Gloucester Cathedral: Lady Chapel.—In the diagram (377) two bays are shewn, and to emphasise the main articulation of the vault tiercerons and liernes are omitted. It will be seen that each bay has diagonals of its own, AD, BC, and CG, DF, but that in addition the double bay has diagonals AG, BF, intersecting at O, the centre of the transverse arch CD. On either side of the longitudinal ridge rib HI are flanking ribs JK and LM. Turning to the photograph (350), in each side cell above the clerestory windows will be found two pairs of complete tiercerons; and in each of the eastern and western cells one pair of incomplete tiercerons. The rest of the ribs are liernes. All down the axis of the vault are overlapping hexagons of varying size and shape. At every intersection are bosses of exquisite foliage. The side cells are tilted up to get in more light. This Lady chapel was finished between 1472 and 1498.

Tewkesbury Abbey: North Bay of South Transept (380).—This vault, like that of Worcester aisle (377), has symmetrical framework ill adapted for a curved surface. In addition to the usual ribs, it has a pair of tiercerons, CJ, JA and DK, KB, in each side cell, and the ribs LM, NO flanking the axial ridge rib FG. In the centre is a big rhomboid formed by



W. F.

1. Christchurch, Hants
2. Beauchamp Chapel
3. Cricklade
4. Oxford Cathedral
5. Worcester Aisle
6. Gloucester Lady Chapel

liernes. The treatment of the bases of the diagonals and tiercerons is common in late vaults; *e.g.*, Minster Lovell (338).

Malmesbury Abbey: the Nave (379).—This is another symmetrical vault, the effect of which is impaired by the want of correspondence of the curves of JK, ML with those of JF, FM, LG, GK. There are no tiercerons. The centrepiece of liernes in each bay is a hexagon, four of the sides of which are continued upward to the apexes A and I of the clerestory windows (381). The vault, clerestory, flying buttresses and parapet appear to be work of the second quarter of the fourteenth century (394).

Bristol Cathedral: Chancel (399).—This church, set out in 1298, was by far the most advanced and original of its day, and in many respects still remains unique: in nothing is its originality more marked than in the articulation of the high vault (381). For it actually omits the axial ridge rib as well as the transverse arches. The transverse ridge rib NO is abbreviated, as also the pair of tiercerons in each compartment, AF, CG, CH, DI, DJ, BK, BL, AM. The remaining ribs are liernes forming unsymmetrical rhomboids, pleasing neither on plan nor in perspective. As there are no flying buttresses, the vault is made to spring at a very low level. This lierne vault is earlier even than those of Ely; in both cases the vaulting would be the last work done; probably between 1332 and 1341; but set out much earlier.

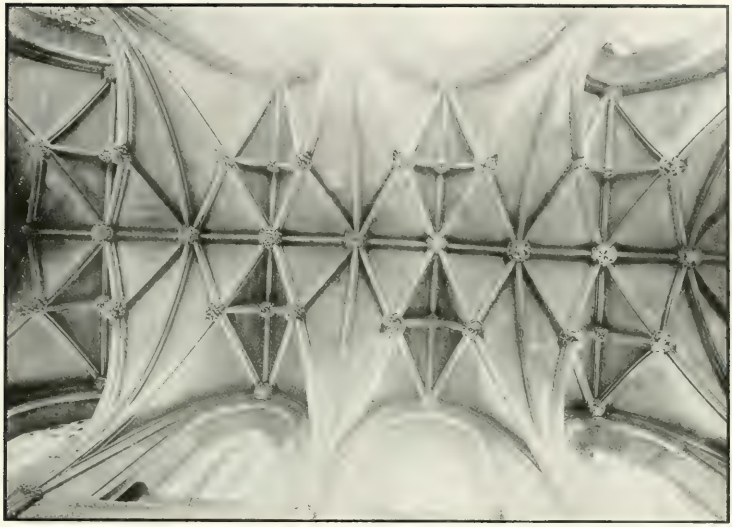
Pershore Abbey: Chancel (379).—In this vault there are tiercerons, AH, CH, BI, DI, in the side cells. The centrepiece of liernes is a rhombus, whose centre is the apex not of the diagonals at E, but of the transverse arch at G (381). The foliated bosses are very large and handsome. The side cells are tilted up and are filled in English fashion. This vault seems to have been rebuilt in the second quarter of the fourteenth century, and to have been influenced by that of Bristol cathedral.

Malvern Priory: Central Tower (379).—In this vault the diagram (381) shews diagonals stopped at the bell-hole. There are tiercerons, CK, DK; DI, BI; BJ, AJ; AH, CH; in each cell. Parallel to the abbreviated axial ridge rib there are flanking ribs TU, XY; and parallel to the abbreviated transverse ridge rib are flanking ribs LM, NO. The remainder are liernes. The vault is probably late in the fifteenth century.

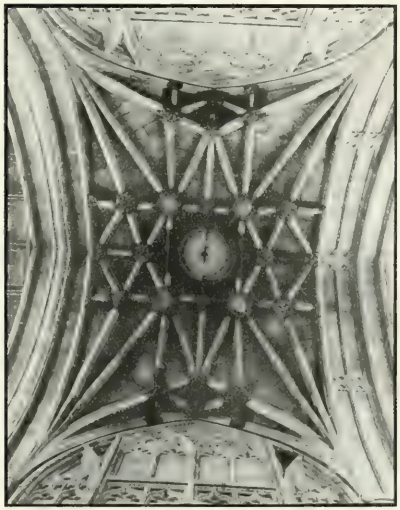
Winchester Cathedral: the Nave (382).—The axial ridge rib FG is unbroken; the transverse ridge rib HI is interrupted. There is one pair of tiercerons, CK, DK; BJ, AJ; in the eastern and western cells. In the side cell on the left there are two pairs of tiercerons; one a short pair, CN, AN; the other a longer pair, CL, AL; the arrangement in the corresponding cell is similar. The tiercerons CL, AL; DM, BM; are continued to meet the axial ridge at J and K, thus providing the bay with a centrepiece in the form of a rhombus. The rest of the ribs are liernes. The side cells are much tilted. The most remarkable thing about this vault is that it has no diagonal ribs. On the bosses of the vault are the arms of Cardinal Beaufort, 1405-1447, and Bishop Waynflete, 1447-1486 (381).

Windsor, St. George's Chapel (346).—This is usually spoken of as a fan vault; but though the ribs springing from the vaulting shaft are fairly equidistant, they are not of similar curve (381). We may regard the oblongs AK and BM as halves of a vault between which has been inserted another vault. For though the diagonals and transverse arches and transverse ridge ribs are continued through the central section of the vault, yet the centre of the bays of this section is not at E where the diagonals intersect, but at G, the apex of the transverse arch, which is the centre of a great twelve-sided star. Moreover the side sections of this vault are constructed in rib and panel,[1] whereas the central section is all panel and no ribs, the

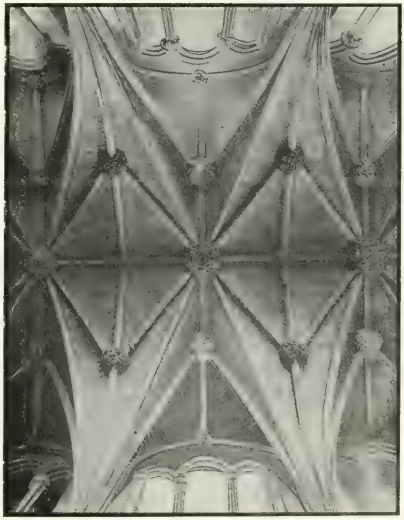
[1] For further illustrations of this vault see *Gothic Architecture in England*, 332 and 341.



G. G. E. Malmesbury Abbey



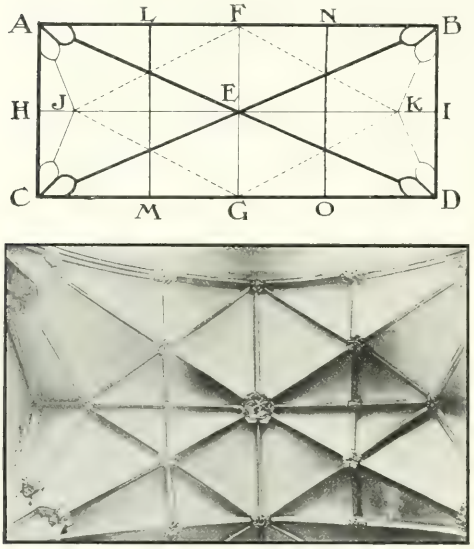
E. E. Malvern



F. B. Pershore

ribs which are seen from below being merely decorative ribs cut on the under surface of the panels. The construction of the centre is quite independent of that of the side sections. The high vault of the chancel was contracted for in 1505, but was unfinished in 1519; that of the nave is *c.* 1528. The aisles have genuine fan vaults; those of the nave aisles were put up *c.* 1537.

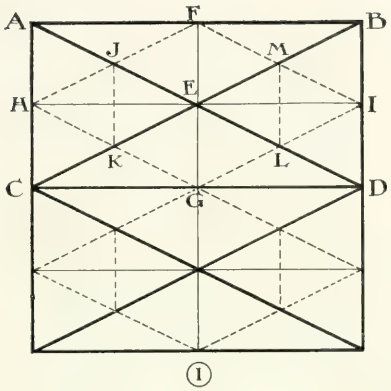
Gloucester Cloister (352).—The earliest fan vault known, that of the canopy of the monument built soon after 1349 over Sir Hugh Despencer in Tewkesbury abbey, has solid fans on which decorative ribs are painted. The canopy, with the conoids on its under surface, is naturally built in solid blocks; and a similar system, making the ribs decorative only, appears soon after 1375 in the monument of Sir Edward Despencer at Tewkesbury. When therefore the southern bays of Gloucester cloister were set out—before 1377—the same system was adopted, the whole vault, as the jointing in the photograph shews, being built in panels, while the ribs are merely projections left on the under surface of the panels: it is not a rib and panel vault, *i.e.*, with ribs independent of the panels; it is all panel. Such a vault is of course quite suitable for the narrow span of Gloucester cloister —12 ft.—but it was long before the builders ventured to construct a vault of wide span without constructional ribs. Nevertheless, where large blocks were obtainable, it was easier to carve the ribs on the surface of the panels than to cut them independently, and in the end the grandest vault of all, that of Henry the Seventh's chapel at Westminster, was built without any constructional ribs (367). A fan vault is particularly well suited for a square bay, as in Gloucester cloister, allowing the fans to be built complete without being shorn away at the sides. In such a vault the fans may well have one design, and the central spandrel another; and probably this is the best method of treating the spandrel. If, however, the fans are allowed to retain their whole development, it follows that the spandrel between them will be a large one. At Gloucester the span of the vault is so small that this is no objection: but in a vault of wide span a large spandrel of the Gloucester type would hardly be safe (356).

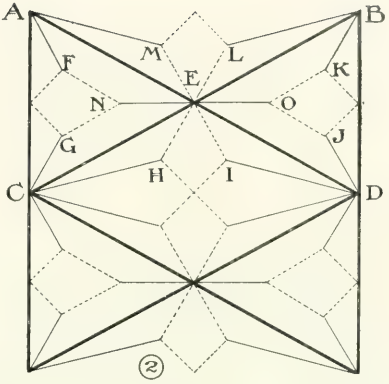


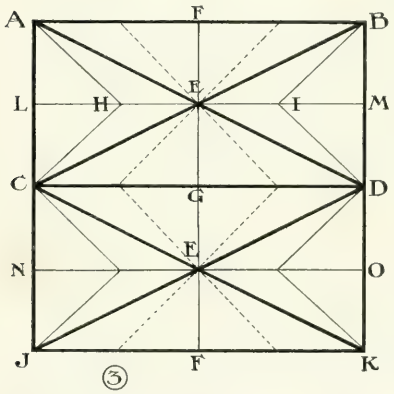
F. B. Tewkesbury: South Transept

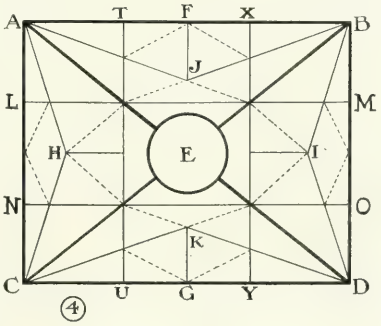
Westminster Abbey: Queen Elizabeth's Chapel (358).—This is another example of vaulting a square bay with four fans; the fans are of full size, and there is an independent treatment of the spandrel, which takes the form of a handsome pendant, surrounded by fleur de lis, Tudor rose and portcullis. Compare the charming little chapel at Evesham (363).

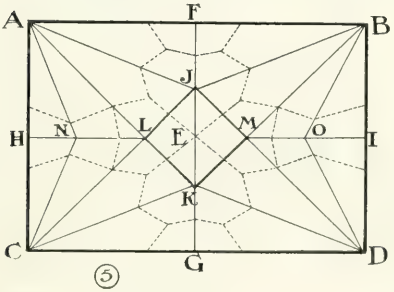
Christchurch, Hants: Salisbury Chantry Chapel (353).—This, being oblong, was not well

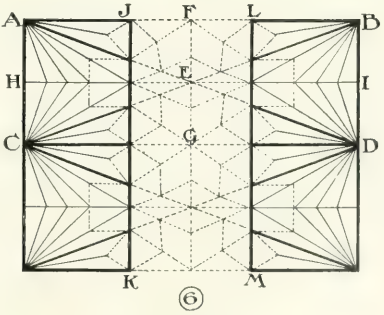










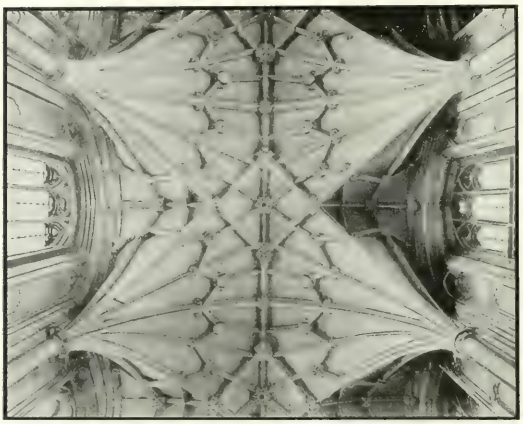


W. E.

1. Malmesbury
2. Bristol
3. Pershore
4. Malvern
5. Winchester
6. Windsor

suited for a fan vault. The difficulty is got over, not quite happily, by running a broad arch across the centre. Some of the fan ribs penetrate the spandrels. The latter are large; the bosses have been mutilated. The fans are fringed with a pretty edging of Tudor flower. The chapel was built before her execution by the Countess of Salisbury, mother of Cardinal Pole. The Royal Commissioner reported to Henry VIII., "In thys churche we founde a chaple and a monumet curiosly made of cane stone prpared by the late mother of Raynolde Pole for herre buriall, which we have causyd to be defaced and all the Armis and Badgis to be delete."

Milton Abbey, Dorset: the Tower (362).—Here the spandrel is purposely made large, the fans being kept small, and the architect has done his best to ruin the independence of the spandrel by reverting to the traditions of the older type of lierne vaults. For ribs are protruded out from the fans into the spandrel, producing diagonals, a pair of tiercerons in each bay, ridge ribs and eight pairs of liernes. The result is a fine stellar centrepiece of four petals, within which is inscribed a circle. Note too the reappearance of the boss. Here lierne design makes a gallant struggle. The fans plainly have constructional ribs bridged across by panels; the spandrel is partly in panel, partly in rib and panel.

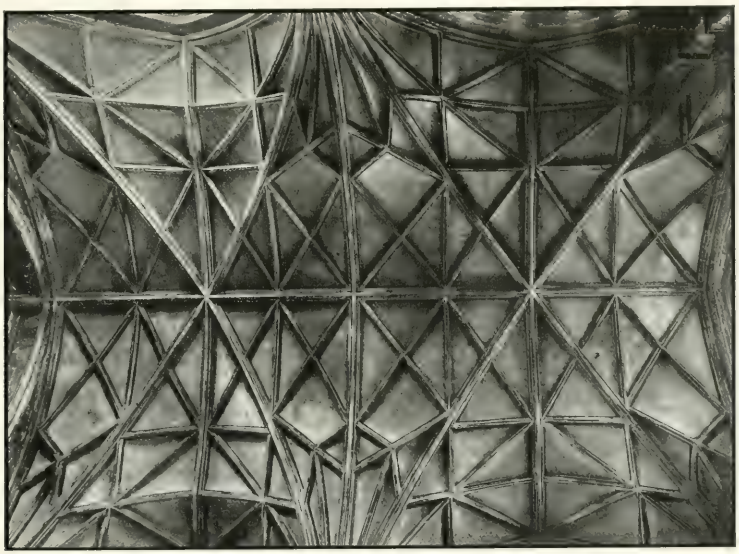


F. B. Winchester Nave

King's College Chapel, Cambridge (359).—Here again there is a yearning for the ancient lierne vault—indeed the design of the vaulting shafts shews that a lierne vault was originally intended—for it has been found feasible to introduce diagonals and ridge ribs and a crowd of tiercerons, and there is a great central boss. The span is some 44 ft., nearly as much as that of the nave of York minster; and to reduce the size of the spandrel as much as possible, each fan has been cut away at the sides. Moreover, following the precedent of the Divinity School at Oxford, built 1481-1483 (343), great stone girders have been thrown across the chapel; a similar construction is seen at the entrance of the apse of Henry the Seventh's chapel at Westminster (365). In the centre of the spandrel is Henry the Seventh's portcullis; the vault was not actually commenced till 1512, and was built with funds provided by his executors. The design of the fan vault of the eastern chapels at Peterborough is closely similar; they were finished about 1532; the vault of King's was finished *c.* 1528.

Sherborne Abbey, Dorset: the Nave (361).—Here again the craftsman is halting between two opinions; he wants to have a fan vault, but he wants it to be a lierne vault as well. To give the latter as much scope as possible, he reduces the dimensions of his fans, which are of full size; this leaves him, as at St. George's, Windsor, a large central section to play with; and as at Milton Abbas, he mixes it up with the fans to the utmost of his power, extracting

from them transverse arches, diagonals and tiercerons, adding ridge ribs and liernes of his own; and pasting on bosses; the result is a mighty tangle. As the drawing of the choir vault[1] shews (360) the Sherborne system is to start with a solid corbel, thereby greatly reducing the thrust; and then to construct the vault above in ribs bridged over with panels, except those parts which have elaborate cuspation on the under surface; these are constructed in panel. There is one important difference between the vaults of the nave and choir; the latter, as is seen by the form of the transverse arch (360), is of semicircular section; but the



Gloucester Cathedral: South Transept

former, built later, is, as the pointed transverse arches in the photograph (361) shew, of pointed section; consequently flying buttresses were required for the former, but not for the latter (396). These illustrations shew clearly the real inwardness of the construction of fan vaults; they are really arched surfaces supported on corbels; indeed in such a vault as that at King's, the vault is practically all corbel. The vault of the choir was built soon after the fire of 1446; that of the nave a little later. From the building of Gloucester cloister, *c.* 1377, no vaults of wide span are known to have been built till those of Sherborne; some, however, may have been built and have perished.

[1] A similar drawing of the nave vault is given in *Gothic Architecture in England*, 346.

ON EARLY RIBBED VAULTS IN ITALY.

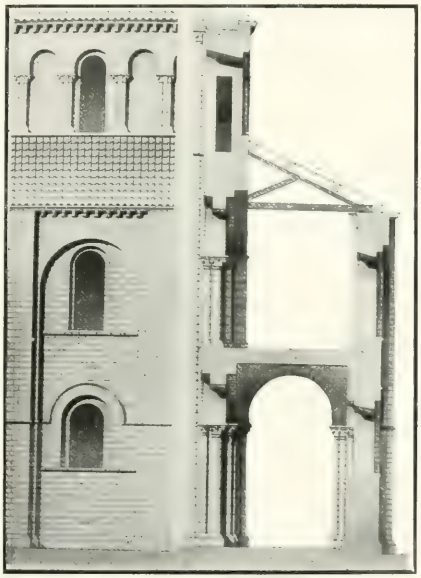
Since the above was written, Mr A. K. Porter has published an important paper on the Romanesque ribbed edifices of Northern and Central Italy. In the church of Lomello, Lombardy, which was probably erected *c.* 1025, the aisles have groined vaults, and the nave is spanned by transverse arches, carrying a wooden roof. But in the ruined abbey church of Sannazzaro Sesia, Piedmont, which was begun in 1040, the nave was covered with *cross-ribbed* vaults, fragments of which remain. To the third quarter of the eleventh century Mr Porter attributes the greater part of S. Ambrogio, Milan, on the ground that it is certainly more advanced than the monuments of the first half of the eleventh century, while it is less advanced than the churches of S. Stefano and S. Celso, Milan, both begun in 1075. These Romanesque churches of Lombardy and Piedmont were copied in Central Italy in a remarkable group of churches at Corneto-Tarquinia, in Umbria, near Civita Vecchia. It comprises four churches, S. Giacomo, the Annunziata, S. Giovanni, and S. Maria di Castello; all four are rib-vaulted throughout. S. Giacomo cannot have been erected later than 1090; S. Giovanni and the Annunziata are earlier than S. Maria, which is known to have been begun in 1122, and to have been completely finished by the middle of the twelfth century, though subsequently remodelled; throughout it has rib-vaults, and the characteristic Lombardic system of alternating piers. From the dates given above it seems highly probable that diagonal ribs were in use in Italy nearly half a century before they were employed in England or France. The reason for the early adoption of diagonal ribs in Italy suggested by Mr Porter has much probability; it is that in most parts of Italy timber of considerable scantling is scarce and expensive, and the cost of centering was very greatly reduced by constructing the web of the high vaults on stone ribs. This is borne out by the fact that the aisle vaults still remained groined; rib-vaults being never used in Lombardy except over spaces of large area, where domical groined vaults could not be erected without the use of unduly heavy centering. If we accept Mr Porter's conclusions, the evidence for which will in due course be printed in full by him, it would appear that by the middle of the eleventh century Lombardy was already in possession of four main features of Italian Romanesque; (1) piers alternately massive and slender; (2) high vaults over square bays; (3) domical high vaults; (4) diagonal ribs. Of these the first—alternating piers—occur in the Romanesque both of Normandy and England, but have no rationale except when employed in sexpartite vaulting, which in England was seldom adopted, and was speedily abandoned. The second is characteristic of German Romanesque, but is practically unknown in Normandy and England. The third is also very rare in English work. Diagonal ribs occur early at Durham and Lessay, but differ so widely from those of Lombardy in their purpose and use that nothing more than a suggestion of them can have come from Lombardy. Of the Lombardic origin, however, of the alternating pier there can be no doubt. See Mr A. K. Porter on "Early Rib-Vaulted Construction in Italy" in the *Journal of the Royal Institute of British Architects*, 14th June 1913; also his monograph on "The Construction of Lombard and Gothic Vaults"; Frowde, 1911.

CHAPTER VI

THE ABUTMENT SYSTEM

I. THE BUTTRESS

WHEN once a vault had been put up, difficulties were by no means at an end; it was not at all easy to induce it to stay up, especially if it was a high vault; Quicherat indeed declared that "the history of architecture in the Middle Ages is nothing but the struggle of architects against the thrust and weight of vaulting." In the end an elaborate system of abutment was devised; by which some of the thrusts of the vaults were stopped by the inert resistance of buttresses weighted with pinnacles; others were transmitted to the loaded buttresses by flying buttresses; others were neutralised by calling into play opposing thrusts.



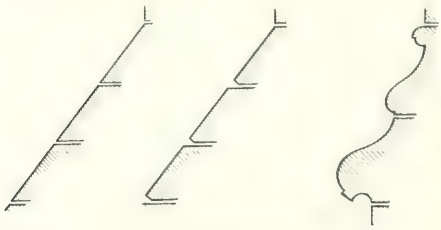
R. R. Abbaye-aux-hommes: the Nave

Of our Romanesque churches very few indeed had high vaults, though in nearly all cases the Greater Churches had vaulted aisles.[1] Most of these vaults were built without ribs and had little lateral thrust, being practically homogeneous masses of concrete; what thrust there was could be effectively resisted by thickness of walls and piers. But when the cross-ribbed vault was devised there was a very serious thrust at or near the point from which one transverse and two diagonal ribs sprang. This was the weak point of the wall. At a point, therefore, in a line with the spring of the vault, the

[1] Exceptions are the aisles of the naves of Carlisle and Rochester cathedrals; and perhaps of Chichester cathedral and Christchurch, Hants. Those of Waltham abbey were originally vaulted, but at a later period the vaults were removed.

wall had to be strengthened outside by adding a projecting mass of masonry bonded into it; this is called a *buttress*.

It follows that since the converging ribs brought down nearly all the weight and thrusts of the vault on to the part of the wall which was buttressed, very little pressure was exerted on those portions of wall which were situated between buttresses, and which constituted much the largest part of the wall. That being so, it would have been a waste of material to make this part of the wall 7, 8, or 9 ft. thick, as it had been in Romanesque work; it could be, and was built much thinner. Moreover, if an arch was built across from buttress to buttress, as in the radiating chapels or the Chapter house of Westminster (333), beneath it glass could be substituted for masonry. This was the course of evolution which, as a matter of fact, Gothic architecture did pursue. Its walls dwindled away more and more to narrow sections of wall—we may call them *wall-piers*—reinforced with buttresses, and between them all was glass; so that normally the flank of a fully-developed Gothic church came to consist of an alternation of buttressed wall-piers and traceried windows. But the wider the space from buttress to buttress, and the greater the height of the window, the more considerable had to be the dimensions of the buttresses; and as they could not be thickened without encroaching on the window space, the additional area could only be got by giving them exceptional projection. The tall, far-projecting buttresses of Southwark chancel (405) and the chapel of King's College, Cambridge, may be adduced as instances. The most striking of all the characteristics of Gothic architecture is the enormous extent to which the suppression of the wall could be and was carried. The result was completely to differentiate the aspect of a Romanesque and a Gothic exterior. In the former the continuous expanse of wall was everything, the pilaster strips on it almost a negligible quantity; in fully-developed examples of the latter the buttress was all in all; to the eye the wall has disappeared, or nearly so. Not that there was so much less masonry in a Gothic than in a Romanesque exterior; the masonry is there, but the greater part of it is set at right angles to the church. When a passenger train is running into Liverpool Street station, the doors are closed, and one sees a continuous expanse of carriage-sides; when it stops, the doors are flung open; what was before a Romanesque is now a Gothic exterior. Even in an early Gothic clerestory the solids still greatly preponderate over the voids, *e.g.*, in the thirteenth-century work of Southwark choir (307); whereas a century later, in Gloucester choir, the proportions are reversed (652).



R. A. D. Feather-edged Buttress

Again, in a Romanesque church the thick wall provided continuous abutment. But continuous abutment is only needed for continuous vaults, *i.e.*, tunnel vaults, such as those of Poitou, Auvergne, Provence, and Burgundy. In Normandy and

S. S. Lincoln: Nave and South Transept.

England, where the cross vault was adopted, its thrusts were intermittent and not continuous, and consequently intermittent abutment was needed, which was provided by buttresses.

Buttresses are useful in several ways. If a garden wall is built 4 ft. high,

buttresses may be dispensed with; but if a wall of the same thickness is to be built 10 ft. high, buttresses will be needed. So also if a roof threatens to spread, it is well to buttress the wall where the principal rafters come down on to it. And the more windows there are in a wall, and the larger the windows, the more valuable buttresses will be; *e.g.*, Lavenham (182).

The value of the buttress was well known to the Roman builders. The Roman theatre at Aosta has buttresses of great projection. A wall of the cemetery of S. Agnese, Rome, A.D. 625-638, has stepped buttresses of great projection.[1] In the neighbourhood of the Roman Wall in the North of England, in the storehouses and in a villa at Cilurnum, built before the year 407, are many fine examples of buttresses of considerable projection, some with molded plinths. But the Roman buttress passed out of the memory of man, and had to be invented over again.

E.B. Beverley Minster: Nave and Transept

The history of the mediæval buttress starts with the pilaster strip, which was also in use in Ancient Rome. It is common in Anglo-Saxon work and in the Romanesque churches of Normandy and England; *e.g.*, the Abbaye-aux-hommes (385). The value of the pilaster strip was partly constructional, partly decorative. In the thin rubble walls of an Anglo-Saxon church like Bradford-on-Avon, these pilasters served as bonding courses. In any case they gave relief to unbroken expanses of wall, and moreover gave an external indication of the disposition of the bays inside the church.

In Norman architecture good examples of pilaster treatment are seen at Ely (573) and Ripon (782).[2] By the middle of the twelfth century these pilasters begin to assume more of the character of the buttress: this appears distinctly in the work of those good builders, the Cistercians, at Fountains, begun in 1145, and Kirkstall,

[1] Rivoira's *Lombardic Architecture*, i. 245. For a list of buttresses in churches of Roman Africa see Cabrol's *Dictionnaire d'archéologie chrétienne et de liturgie*, xiii. 577.

[2] An early example of the pilaster strip is shewn from St. Stephen's, Caen (385). In this diagram the triforium chamber is represented as unvaulted, as at Peterborough (736) and Ely: it is more likely that it had a *demi-berceau*, as at Gloucester (735).

begun in 1152. A considerable time, however, elapsed before the great value of the buttress was generally recognised. In Wells choir, *c.* 1175 (754), though it is vaulted throughout, the buttresses are very shallow; the builders preferred, like their Romanesque predecessors, to rely on thick walls. Even at Salisbury, where the buttresses project far, the builder had no great faith in them, for he built his clerestory walls 7 ft. thick at the top. This is characteristic of the whole of the early Gothic school of the West of England, of which Pershore abbey, Worcestershire, is one of the latest and most advanced examples; though set

F. S. New Shoreham: from South-east

out in the early years of the thirteenth century, it retains the old-fashioned pilaster strip of such Norman work as Peterborough cathedral, with shafts on the angles; so also Beverley (851). Side by side with Wells cathedral was going up the French chancel of Canterbury, begun in 1175, in the eastern portions of which the buttresses are of great projection (406). It was the Canterbury fashion, not that of Wells, which ultimately prevailed; Lincoln nave, set out *c.* 1220, is marked by great projection of buttress: so also is Southwell chancel, in which the buttresses of Lincoln nave were copied some ten years later. After this, great projection of buttress became almost universal; the chief exceptions occur where freestone, which is necessary for buttresses, was not to be had

except from a distance, and then at great expense; *e.g.*, in the chalk districts it was cheaper to dispense with buttresses; the walls of the church or the tower, which were built of chalk faced externally with flint, being given additional thickness; *e.g.*, Climping (201) and Tangmere, Sussex.

Buttresses were exceptionally valuable at the angles of a nave, chancel, aisle, porch, or tower; and, as a rule, a pair was built at these points, one against each wall; *e.g.*, in the towers of Beverley (6) and Lavenham (895). But from the fourteenth century it was common to employ but one buttress, set diagonally; *e.g.*,

F. B. Chichester: Chancel

F. B. Chichester: Nave

in Lavenham aisle (182), and Earl Stonham (897); a few examples of this treatment occur even in the thirteenth century; *e.g.*, the towers of Polebrook and Wadenhoe (886), and the chancel of Glapthorn, Northants. In Devon diagonal buttresses are almost unknown. In France the diagonal buttress is almost exclusively employed from the beginning of the fifteenth century; its introduction may be due to English influence.

The form of the Gothic buttress, as finally developed, was determined partly by constructional, partly by practical reasons. Suppose that inside an aisle there is a cross-ribbed vault; the united thrusts of its loaded ribs will reach the ground

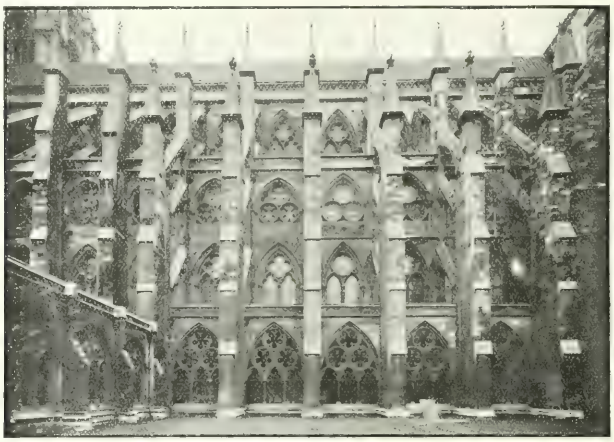
outside in an oblique direction. To catch these thrusts a rectangular buttress may be built; of this, however, a good deal of the upper masonry seems to

L. W. Westminster: Presbytery

be unnecessary. If it be dispensed with, then the buttress becomes triangular. This form, however, is not only ugly in itself, but exposes all the joints, which are termed *feather-edged* joints, of the face of the buttress to the action of rain

and frost.[1] So a great improvement was introduced, viz., to build the buttress in two or more steps or stages, each stage projecting further than the stage above it. Moreover, the face of each stage was built vertical. Finally, the lowest course of each stage was made to project above the uppermost course of the stage below; the projecting course is called a *weathering*. With a buttress thus constructed the vertical faces of the buttresses were protected from the drip of rain; the weatherings could be sheltered by sloping slabs. Simple buttresses of two stages were added to the Norman aisles of Christchurch, Hants, in the thirteenth century (739).

It remained to decorate the buttress. Each period had its own ideas about that. In Peterborough cathedral, set out in 1096, the pilaster strips have shafts on



F. R. T. Westminster: Nave and Cloister

the angles; so have the buttresses of Malmesbury, *c.* 1150 (394), Lincoln choir, 1192; those of Pershore, *c.* 1210, and those of Worcester retro-choir, begun in 1224, and Beverley minster, *c.* 1230.[2] In the Romanesque schools of Lombardy, Provence, and Auvergne, a column is made to serve as a buttress; a purpose for which it is ill adapted; very few examples occur in English Romanesque; the tower of St. Peter's, Northampton, is one of them; at Peterborough it is seen in the Norman clerestory of the nave (919), at Ely in the Gothic Galilee. The Romanesque differs from the Gothic buttress not only in shallowness of projection, but in the fact that

[1] On p. 386, in the diagram on the left, the courses are feather-edged; in the central diagram they are supposed to have suffered from the weather (they should be more ragged); in the diagram on the right a characteristic Gothic treatment is shewn.

[2] They are seen in the Beverley transept on the right-hand side of the illustration on p. 388.

it is not divided into stepped stages; also, that it only rises up to or near the eaves, and therefore never has a gablet or pinnacle surmounting it.

A few Gothic buttresses have but one stage; *e.g.*, those built at Beverley in the thirteenth century (851); but as a rule they have two stages, except in cases where they are unusually lofty; later on, three or more stages are common. There are three stages in the thirteenth-century buttresses of Southwark cathedral; they have exceptional projection also (405). In the first half of the fourteenth century a peculiar buttress is frequently employed; it is of two stages, with the upper stage

F. H. C

Exeter Chancel

exceptionally tall. The set-offs of a buttress are generally of different slope, the upper having a steeper slope than the lower ones; this was to keep the bottom part of each stage visible; at Netley, however, the lower set-offs have the steeper slopes.

Sometimes the date of a buttress can be ascertained from the moldings of the ground course and set-offs. In the more decorative examples the presence of characteristic ornament supplies data; *e.g.*, tooth ornament, ball flower, conventional, naturalistic, or undulatory foliage, pedimental or ogee niches, rectangular panelling. Thus at Ely the buttress is crossed by stringcourses of billet and sawtooth (573);

that of Lincoln retro-choir has trefoiled arches, surmounted by crocketed pediments (784); that of Lichfield nave has crocketed pediments (785); that of Winchester nave has a panelled upper stage (786). But at all periods a large number of unornamented buttresses occur, which it is difficult to date; all that can be done is to ascertain whether they are bonded into the walls, and if they are, endeavour to date the walls.

G. G. B. Malmesbury, South side

THE PINNACLE

A pinnacle, whatever its shape, is a mass of superposed masonry, intended to load down and render immobile masonry below. If a large packing case be placed on the floor, it may be possible to thrust it along so long as it is empty; it is not possible if a cartload of bricks be stacked upon it. The function of the pinnacle, as of the bricks, is primarily constructional. Its position, however, on the skyline rendered it so conspicuous that much care was lavished on its design. The earliest Gothic buttresses had to have their heads protected in some fashion from the rain; and this was done by providing each with a little saddle back roof or

gablet; these gablets, being good substantial construction, remained long in fashion; *e.g.*, they appear in Christchurch (739), the nave (783) and retro-choir (784) of Lincoln, Ely presbytery (574), Beverley Minster (851), Lichfield nave (785), Carlisle choir, after the fire of 1292, and Lichfield Lady chapel. It is a pity that they were ever given up for the fussy, spiky pinnacle of later Gothic. Later the pinnacle became tall and slender, and its sides were decorated with pedimented or ogee niches, or it was surmounted by a spirelet up the angles of which ran crockets, and was terminated by a finial, both crockets and finials being carved with the fashionable foliage of the day; *e.g.*, Ely choir (575), Lincoln nave (783), Beverley nave (388), Malmesbury (394). Sometimes the pinnacle was hollowed out, as in the west front of Howden (1), the central tower of Gloucester cathedral (915), and many Somerset towers; *e.g.*, Dundry (910). The earlier pinnacles are low and massive; the later usually tall and spiky; these last are constructionally unsatisfactory; being exceptionally exposed to wind and weather, they have often fallen or threatened to fall, and have had to be renewed. In Tudor work the pinnacle sometimes takes the form of an ogee cupola of masonry; *e.g.*, in Wrexham tower (894) and Winchester chancel (397); a form which, reproduced in timber and lead, was a great favourite in the Elizabethan and Jacobean halls.

I. B. Christchurch: South Transept and Choir

In Norfolk it was common to weight the angles of the tower with statues of the four Latin Doctors of the Church—Sts. Jerome, Ambrose, Gregory, and Augustine; in a few instances their place was taken by the four Evangelists; on the octagonal belfry of Acle the Doctors and the Evangelists used to alternate. At Erpingham, Norfolk, one of the four Doctors fell in 1721, and killed a parishioner, when his companions were taken down. The four Doctors still remain on the towers of Barton Turf, Barnham Broom, Filby, Gayton, Halvergate, Honingham, Horning, Ormesby St. Margaret, Ridlington, and Winterton.[1] To these may be added St. Botolph, Cambridge.

[1] Rev. Dr Cox's *Churches of Norfolk*, i. 19 and 153.

From an early period pinnacles were employed at points where two walls met; *e.g.*, of a tower or a nave or chancel or aisle. Early examples of pinnacles are to be seen in the west front of Tewkesbury and flanking the apse of Peterborough (138). Both in the twelfth and thirteenth century it was common, whether the pinnacle was square or octagonal, to add shafts at the angles, just as was done with the buttresses. From the last quarter of the thirteenth century the design of the

C. F. N. Sherborne Chancel

pinnacle in general followed that of the window tracery of the day; first having geometrical patterns with crockets of naturalistic foliage; then from *c.* 1315 ogee patterns and flowing curves, with crockets of undulatory foliage; these remained long in use, never being wholly superseded by the later rectilinear panelling.

It is remarkable that though the value of pinnacles at the angles of a building had long been recognised, it was not till 1245, when Westminster abbey was set out, that detached pinnacles were employed to weight buttresses. The use of the detached pinnacle to weight buttresses is the one important constructional improvement due to the Gothic builders. With that exception the whole group of constructional problems involved in vaulting a basilica had been solved by the

Romanesque builders; all that the Gothic masons were left to do was to give decorative form to Romanesque construction. Even the invention of the pinnacle was of no great value, either constructionally or artistically.

Another function of the pinnacle was to steady a light, open parapet; *e.g.*, in the chancel of Selby (643), where, however, the pinnacles also serve to weight the aisle and clerestory buttresses, which were built to receive flying buttresses, the original intention being to vault the chancel in stone. Pinnacles form a necessary feature in the open parapets of such Somerset towers as Dundry (910).

F. B. Winchester Presbytery

THE FLYING BUTTRESS

A flying buttress is in essence simply a prop. If his haystack threatens to topple over, a farmer stays it with a prop of wood. If a wall threatens to topple over, a pier may be built some distance away, and a prop built from the pier to the wall; the walls of the Chapter house of Lincoln had to be propped in this fashion, after the insertion of a vault had begun to thrust them out (148). In this case the prop or bar is not constructed in wood, but in coursed ashlar; and these bars of coursed ashlar have to be supported in some way. This support is given by building beneath them a half arch of masonry, which springs from the inside of a pier or buttress and abuts the wall.[1] Normally then a flying buttress or "flier" consists of two parts; the upper bar and the half arch beneath which carries it; *e.g.*, Lincoln retro-choir (407). Sometimes, however, the bar is omitted; the arch being built very flat and serving also as bar; this is the case with the earliest external fliers we possess; those of Canterbury chancel, *c.* 1175 (406). In later days the flying buttress exhibits a complex disposition; *e.g.*, in Henry the Seventh's chapel, Westminster, at the bottom is an arch, then a bar, then tracery supporting a second bar, then an inverted arch; with these may be compared the flying buttresses of Louth spire (773).

The main use of the flying buttress was to stiffen a clerestory wall, especially

[1] Sometimes it springs from the pinnacle; *e.g.*, at Beverley (388); this is not good construction.

where there was a high vault within.[1] This, however, was not easy to do. If the walls of an aisle were endangered by the thrusts of a cross-vault, buttresses could be built against them as big as desired. But not much buttressing can be given to a

F. S. Bristol Cathedral: from South-east

clerestory wall. For on what does a clerestory buttress rest below? It rests, with the wall-pier into which it is bonded, on one of the pillars between the nave and the aisle. If the buttressed wall-pier of the clerestory is 6 ft. thick, the pillar below will

[1] Wood-roofed churches without vaults sometimes had flying buttresses, when the window area was large; *e.g.*, Fotheringhay (19).

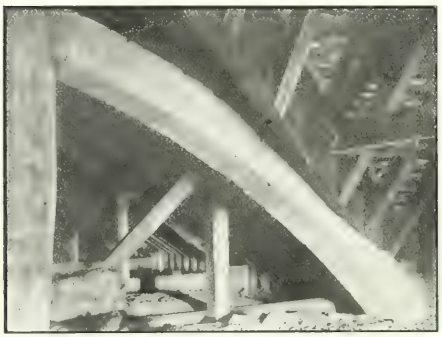
have to be nearly 6 ft. thick; if a buttress as big as one of those of the aisles be added to the wall-pier of the clerestory, the latter may have its thickness increased

E. S. Bristol: South Aisle of Choir

to some 12 ft.; and to carry these 12 ft. the pillar below must be nearly 12 ft. in diameter. Obviously, however, if pillars are to be of this enormous thickness, they

will largely block up the arcades, diminish the light of the nave, and seriously reduce the area of the nave and aisles. Therefore, a direct system of buttressing on a large scale was rarely applied to clerestory walls;[1] except in the early churches of the Cistercians in Burgundy, *e.g.*, Pontigny, where the natural corollary follows, that the pillars are of exceptional thickness. It was soon recognised that clerestory buttresses must be small, and that being small, they were not of much use; in Lincoln retro-choir they are dispensed with altogether (407).

So far as England is concerned, the invention of the flying buttress is due to Durham. The whole cathedral seems to have been vaulted between *c.* 1100 and 1133; and to enable the clerestory walls of the presbytery to withstand the thrusts of the high vault, the builders inserted strong semicircular arches spanning the triforium chamber underneath its roof (402). Such transverse arches, however, do not abut the clerestory wall sufficiently high up; and this high vault collapsed early in the thirteenth century, when it was replaced by the present one. Similar transverse arches were originally present in the triforium chamber of the presbytery of Chichester, but were afterwards removed in favour of a double system of abutment, comprising both internal and external flying buttresses (409). In the nave of Durham, which received a high vault in 1128-1133, instead of transverse arches, internal flying buttresses were built; and reinforced by these, the clerestory walls have stood fast, and the high vaults have remained safe to this day (403). In Norwich cathedral also, set out in 1096, all the preparations for internal flying buttresses may be seen in the triforium chamber. It was not, however, for another half century that the internal flying buttress won its way to acceptance as the favourite method of abutment in the early Gothic school of the West of England. Wells cathedral, set out *c.* 1175, has a complete system of internal flying buttresses (404); a few years earlier probably flying buttresses were inserted in the triforium chamber of the Norman presbytery of Worcester cathedral, where their top and bottom courses still remain; so they were also at Pershore, *c.* 1210, where there remains one flying buttress complete in the triforium chamber and the springers of others; Salisbury is in some respects an offshoot of the South

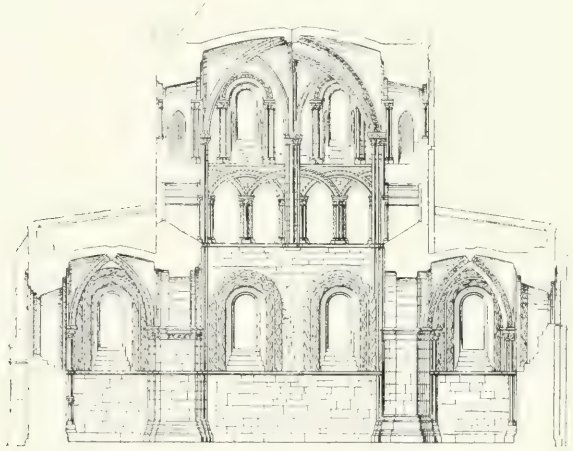


G. H. F. Pershore

[1] Gloucester choir has massive buttresses between the clerestory windows; but there are below very thick Norman piers for them to rest on. Good examples of clerestory buttresses are illustrated on pages 388, 394, 402, 403, 404, 405, 411, 413.

of England school of Gothic, but it has the Western system of internal flying buttresses; all the external ones now seen are later additions (404); York transept, built between 1230 and 1260, has internal flying buttresses; finally, so late as *c.* 1400, when the nave of Winchester cathedral was vaulted, the clerestory wall was stiffened with internal flying buttresses.

To flying buttresses in the triforium chamber there was one serious objection; viz., that they provided abutment low down; such abutment was barely adequate where the authorities were satisfied with churches as low as Wells (404) and Pershore, but was decidedly hazardous in Salisbury (404), where the vaults rise to a height of 84 ft.[1] Minsters, of course, like those of Amiens, 138 ft., and Cologne,



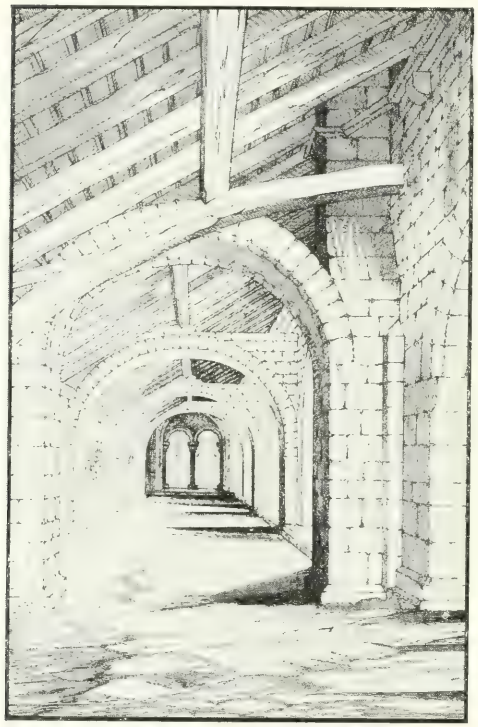
D. B. St. Cross, Winchester

155 ft. high internally, could never have been constructed at all by such a humble expedient. The remedy was to build the flying buttress not beneath the aisle roof but above it, *i.e.*, in the open air. Of our external flying buttresses the earliest are those of Canterbury chancel (406); next come those of Chichester chancel, *c.* 1186 (390), New Shoreham (389), and Boxgrove (41), *c.* 1235; all these three are of similar design; heavy, flat, and clumsy. Then, suddenly, flying buttress design takes a great leap forward; as may be seen in Lincoln nave, *c.* 1230 (51), in the contemporary work of Southwark cathedral (405), Beverley Minster (388), Lincoln retro-choir (407), Exeter cathedral (393), and Malmesbury (394); in all these the fliers are coped, tilted up, and elegant. After this date the external flying buttress came more and more into employ-

[1] It was found necessary later to add three external fliers on the south side of Salisbury nave.

ment, and a considerable amount of care was spent on its artistic development; *e.g.*, at Winchester (397), Sherborne (396), Christchurch (395), Henry the Seventh's chapel, Westminster (773), and Bath abbey.

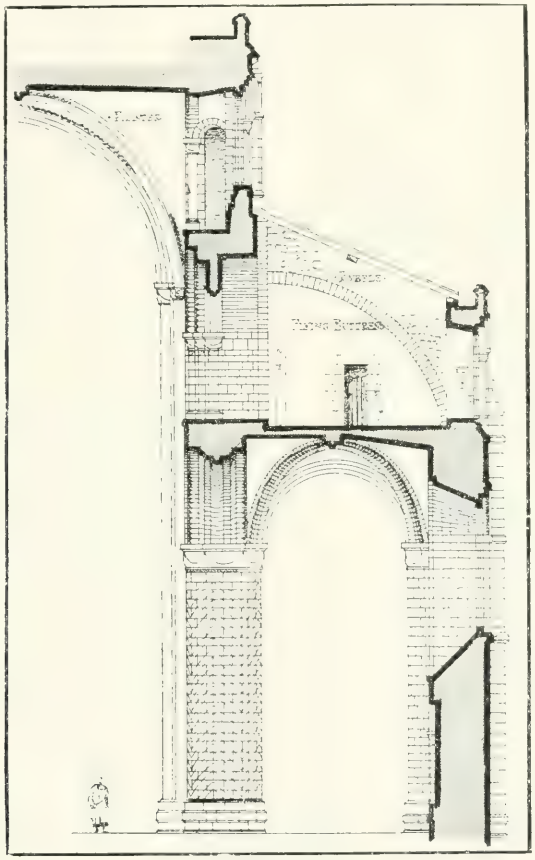
It has been generally accepted that the external flying buttress was in general use in France by the middle of the twelfth century, especially as high vaults are known to have been built at St. Denis in 1140-1144, and these seem to postulate flying buttresses. But M. Lefèvre-Pontalis has arrived at the conclusion that flying buttresses were unknown in the old province of Champagne or in any other region of France in the middle of the twelfth century.[1] As for our own examples, those of Canterbury, like the choir itself, are probably of French design; but those which followed after 1186 at Chichester, New Shoreham, and Boxgrove, are totally different from those at Canterbury; they may, however, have been borrowed from similar work in France, *e.g.*, from St. Germain-des-Près, Paris. The perfected flying buttresses of Lincoln nave, Southwark choir, Beverley choir, and Ely presbytery are again in no respect similar either to those of Canterbury or to those of Chichester, New Shoreham, and Boxgrove; for these also a French origin may be suspected; an indigenous development does not proceed by hop, skip, and jump. Nevertheless, it is strange that if we anticipated France, as we did, in the invention of the internal flying buttress, we should have to appeal to her for advice how to



R. B. Durham Presbytery: Triforium Chamber

[1] "Au milieu du douzième siècle l'usage des arcsboutants était complètement inconnu dans la Champagne comme dans les autres régions de la France." He is of opinion that all the following external flying buttresses were built *après coup*, *i.e.*, were later insertions; of the choir of Pontigny; the chevets of Pontigny, St. Quiriace, Provins, Notre Dame, Chalons-sur-Marne, St. Remi, Reims, St. Leu d'Esserent, St. Germain-des-Prés, Paris; the presbytery of St. Pierre, Bar-sur-Aube; and the south transept of Soissons cathedral. *L'architecture gothique dans la Champagne méridionale au XIIIe et au XVIe siècle*: page 13.

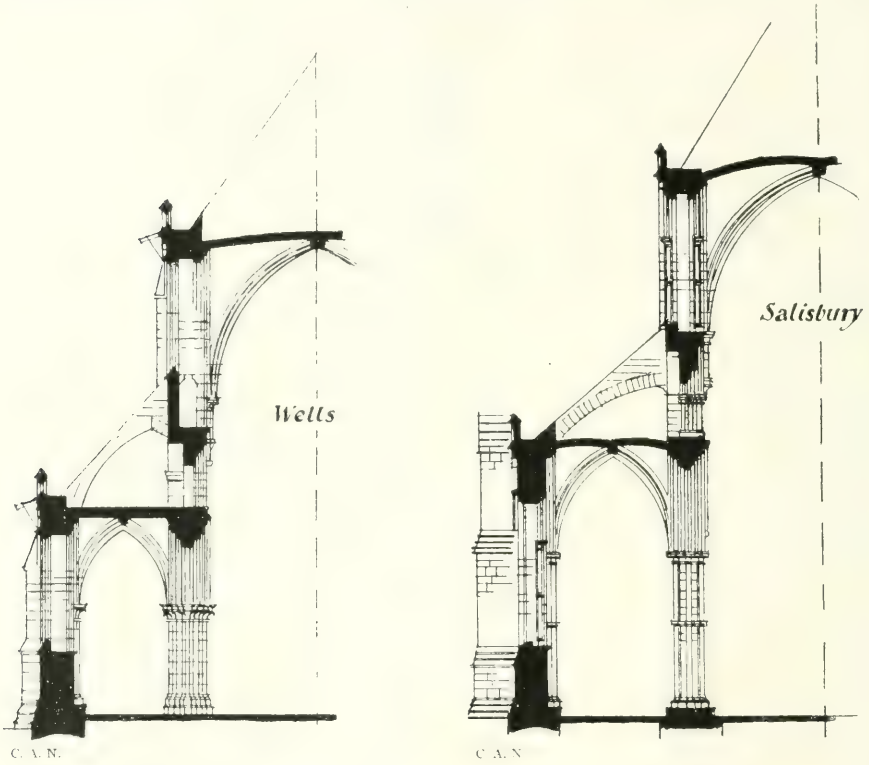
build one in the open air. The fact that the English builders never took kindly to the external flying buttress is not without significance; if it was un-English, that in itself would tend to condemn it; we like our own homely ways best; "A poor



J. H. T. Durham Nave

thing, Sir," as Touchstone said of his wife, "but mine own." Whether it was a foreign importation or not, it was open to grave objections, both practical and artistic. It was difficult to build and difficult to repair; and though on it the stability of the whole building depended, it was built in the open air, exposed to

the disintegrating forces of wind and rain and frost; far better had it remained beneath the shelter of the triforium roof. Externally, being simply so much permanent scaffolding, it is ruinous to the general run of the lines of the building,

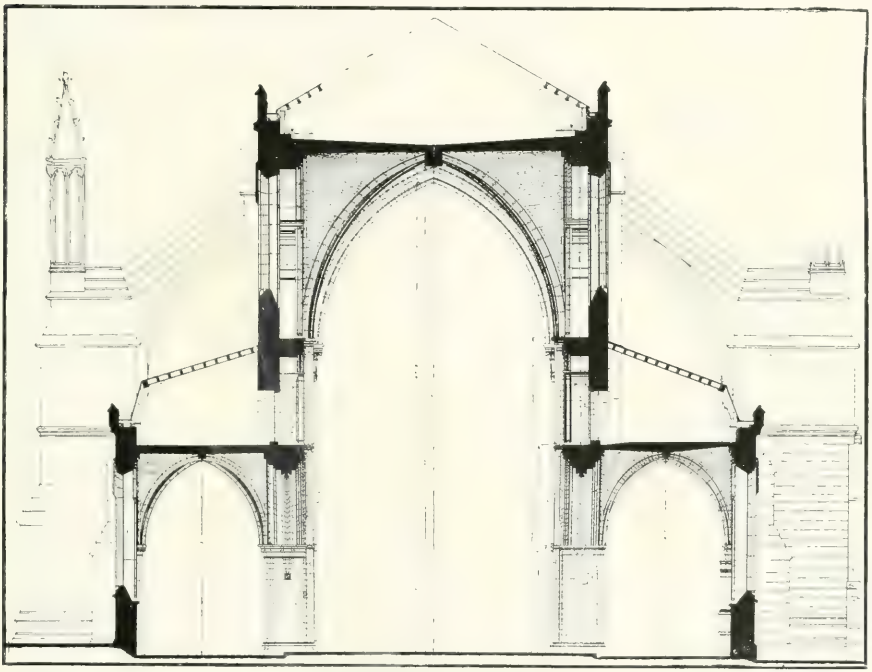


especially when the abutment comprises superposed fliers in double flights, as in Westminster abbey (392).

One mark of distrust of the newfangled abutment system was the addition of a transverse arch across the triforium chamber; this occurs in Canterbury choir (406), and was added in Lincoln choir, when it was vaulted, *c.* 1237; it is well seen in Lincoln nave and retro-choir (407). In Chichester nave, as remodelled in 1186, there is a flying buttress beneath the triforium roof as well as one above it; so there was in Ely presbytery, as originally built (409, 411).

In Selby choir, rather than have external fliers, the vault was constructed in

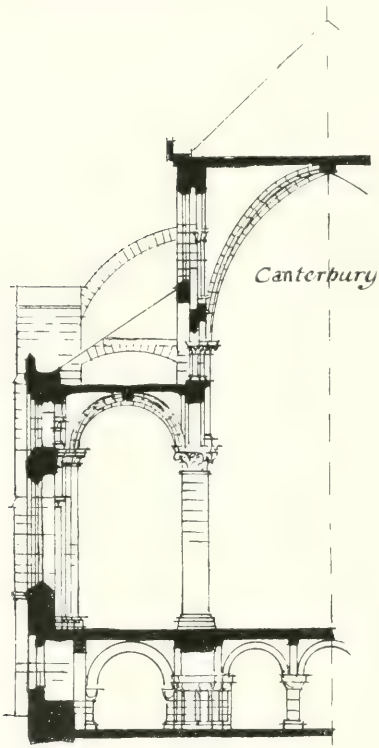
wood; this is the more remarkable, as heavy pinnacles had been built to weight the buttresses from which the fliers were to spring (643); in St. Albans choir also are to be seen the preparations for a stone vault, but it was ultimately ceiled in wood. The tall vaulted clerestory of Gloucester choir, being without fliers, looks very unsafe; but the Norman piers below permitted the construction of massive clerestory buttresses; moreover, in the triforium there remains the



G. E. S. L. Southwark Cathedral: Chancel

ancient demi-berceau (735). But the safety of such vaults as those of the choir of Gloucester (652), the nave of Sherborne (361), and the presbyteries of Wells and Ottery St. Mary (349) is mainly due to their being of acute section. In many cases the builders were satisfied to retain the ancient Romanesque system of abutment; the high vaults of St. Cross (401), the naves of Gloucester and Norwich, and the chancel of Oxford cathedral have no abutment except the great thickness of the Norman clerestory wall. The vault of Salisbury, 84 ft. high, owes its safety partly to the presence of internal fliers, but mainly to

the fact that the clerestory wall is no less than 7 ft. broad at the top. As for Worcester, when the choir was remodelled and received the present vault in the middle of the thirteenth century, the twelfth-century fliers were removed from the triforium chamber, and the high vault was put up without any fliers at all; the present ones were only added in modern days; it may be that here, as at Salisbury and Southwell, the builders thought that projecting masses such as eastern transepts and tall porches would sufficiently steady the clerestory walls.

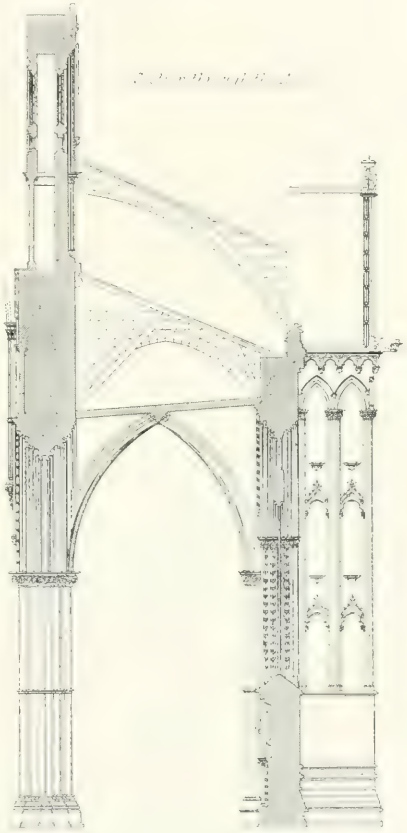


C. A. N.

In constructing a flying buttress the following considerations ought to be borne in mind; almost all of them were neglected in the earlier examples: (1) The flier should not consist of an arch only, as in Canterbury choir, but of an arch supporting a bar. (2) The upper surface of the bar should not be flat, as at Boxgrove, otherwise rain will find its way into the joints; it should be protected either by a coping (393) or by overlapping slabs (22). (3) The arch should be of a very flat curve; if it is, for example, semicircular, it may burst up in the centre. (4) It should be tilted up at a sharp angle, as at Exeter, Malmesbury, Winchester, and Sherborne. (5) For the same reason—that the buttresses may not be thrust out of the vertical—the fliers should be made as light as possible; those of Chichester, Shoreham, and Boxgrove are too massive and heavy. (6) To this it may be added that the springers of the flier should be weighted with a pinnacle; *i.e.*, the pinnacle should not rest on the top of the buttress, but be placed "in false bearing" ("*porte à faux*"), as at Malmesbury, on the haunch of the flying buttress (394), to prevent it rising up, and not as at Southwark (405).

In the humble vaulted minsters of England, none of them rising higher than 84 ft. internally, a single flying buttress, properly constructed, made the clerestory wall safe. But in cathedrals of the vast height of Amiens, Beauvais, Cologne, it was necessary to build two flying buttresses in superposition; the same disposition is found on the flanks of Westminster abbey, a church of the Ile de France school as regards its plan, elevations, altitude, and proportions, and whose vault

rises to a height of 101 ft. (391). Of the two fliers the lower one takes most of the thrust of the vault; the upper one stiffens the clerestory wall weakened by the presence of large windows, and also serves as a precaution against any tendency of the wooden roof to spread. Over the north walk of Westminster cloister there are no less than three fliers in superposition (413).



C. W. Lincoln Minster: Retro-choir

Sometimes the upper surface of the uppermost superposed flier was channelled to serve as an aqueduct; *e.g.*, on the north side of the naves of Lichfield and Chichester (390); so also the original fliers of Ely presbytery, in which the water passed through an aperture in the buttress — a very bad arrangement; in the later work (shewn on the left) the water is discharged by a gargoyle at the side of the flier (411), as in the nave of Exeter.

Where a nave is flanked by double aisles, or as at Westminster by an aisle and a cloister walk, the fliers generally descend to the outer buttresses in two flights.

About the functions of the flying buttress there has been considerable controversy. The accepted theory has been that its function is to apply, not to transmit thrust. Gothic construction is conceived to consist of an equipoise of opposing thrusts, the vault thrusting in one direction and the flying buttress in the other, so that the two thrusts neutralise one another. But if we may revert to the farmer's haystack, what is it that keeps it from toppling over? Surely it is the inert resistance of the ground, to which the thrust of the stack is transmitted by the wooden prop; the prop itself does not thrust at the stack except to an infinitesimal extent. But the flying buttress is thought to thrust at the wall most violently; indeed we are told that if the vault inside were removed, the clerestory wall would fall in. This is sheer delusion. Winchester presbytery has heavy flying buttresses; yet they have not thrust in the clerestory walls, although the vault within is but a sham vault of wood. The high vaults of Melrose abbey have fallen in, but the

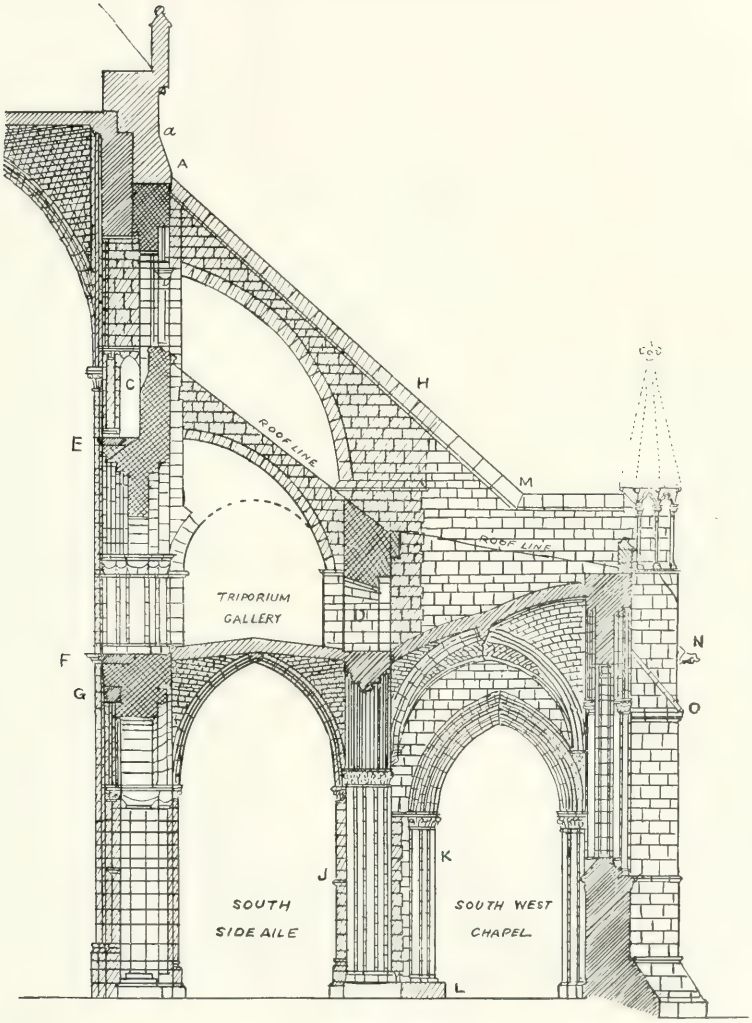
flying buttresses and the walls are still standing. And at Westminster abbey we know that all the flying buttresses of the western bays of the nave were completed before the high vault was commenced; plainly the Westminster masons had no idea of the immense thrusting power which is supposed to inhere in the flying buttress.[1] And even if we admit that there was some thrust in the Chichester group of fliers, owing to their being so heavy and built at so obtuse an angle, it is certain that the builders never repeated this design, but designed their fliers to have as little thrust as possible, by making them light, and by setting them up much more vertically; evidently what they wanted in a flier was not thrust; to them it was little more than a stay or prop.

It has been seen in the last section what great difficulties were involved in the vaulting and abutment of a clerestoried nave. So serious were these that many of the builders boldly cut the knot either by omitting the clerestory or by omitting a stone vault. Durham nave had received a high vault in 1128-1133, but found very few imitators for half a century; even in Gothic days many of the Greater churches were still built without high vaults. Especially was this so in the North of England; a long list might be compiled of churches of the Northern type of Gothic, including St. Hugh's work at Lincoln, which was without a high vault till after 1237; York Minster, the greatest of them all, put up unvaulted transepts, 1230-1260, an unvaulted Chapter house, *c.* 1300, an unvaulted nave, 1291-1324, and an unvaulted chancel, 1361-1400. In parish churches, *e.g.*, Lavenham (182), which in the later days of Gothic were very seldom vaulted,[2] the problems of abutment were much simplified. Provided that due precautions were taken against the spread of the roof, it was possible with a moderate amount of buttressing to make both the aisle and the clerestory walls secure, even when they were almost a continuous sheet of glass (808).

In minor buildings the basilican elevation, *i.e.*, with a clerestory, was rarely employed. If a large vaulted refectory or an oblong Chapter house was set out, and it was desired to keep it low, one or two rows of pillars were built, and it was vaulted as two or three naves; a fine example may be seen at Mt. St. Michel in the Salle des Chevaliers. If these three were of the same height and breadth, as was usual, the outward thrusts of the vault of the central nave would be neutralised by the inward thrusts of that of the side naves. Sometimes, however, the side naves were not so broad and lofty as the central nave; in that case, security could be gained by loading each pillar with a heavy pinnacle. Of this method of construction we have two important examples in our churches; the chancel of the Temple church, consecrated in 1240 (415), and that of Bristol cathedral, 1298-1341 (399); among minor examples may be mentioned the retro-choirs of the cathedrals of Winchester and Southwark. In Germany and France examples are plentiful; in the latter, numerous

[1] For the accounts of this Westminster work, see R. B. Rackham's *Nave of Westminster* in vol. iv. of the *Proceedings of the British Academy*, and the writer's *Westminster Abbey*, 122.

[2] St. Mary Redcliffe, Bristol, is a notable exception.



R. W. Chichester Nave

churches of the Plantagenet school of Gothic are without clerestories; notable examples are Poitiers cathedral and St. Serge, Angers (289). In all these the side naves are as lofty or nearly as lofty as the central nave, and therefore admit of very lofty windows, *e.g.*, at Bristol (398), and the interior is almost as well lighted as if they had clerestory windows. It is somewhat surprising that a system which gets rid of the objectionable flying buttress, while retaining high vaults and providing good lighting, was not adopted more generally in our Greater churches. The objection may have been that it entailed great breadth of aisle, whereas we have seen that in the churches of monks and canons aisles were of little use except as gangways or passages.

TYPICAL ABUTMENT SYSTEMS

The subject of abutment is so important in Gothic architecture that it may be well to recapitulate the chief methods employed.

I. In the Greater churches, wherever vaults were introduced, difficulties of abutment arose. The vast majority of parish churches had no vaults, and in them no such difficulty arose; whether the wall was an aisle wall or a clerestory wall, *i.e.*, a nave wall, all that was done was to build it sufficiently massive and with good foundations, and if it was much fenestrated, to provide substantial buttresses as at Lavenham (182).[1]

II. In the Greater Norman churches as a rule—Durham is the chief exception—there was no high vault. Almost always, however, the aisles were vaulted. In such churches, *e.g.*, St. Cross (401), the aisle wall could not move inwardly, because of the presence of the aisle vault. For the same reason the nave walls could not move outwardly. There was, however, a danger that they might incline inwardly, and this could only be guarded against by making them extremely massive

III. When a vault was thrown across from one clerestory wall to the other—first, apparently, in Durham choir—a new danger arose. The supports of the lower part of the nave wall—*i.e.*, the piers and arches—could not incline outwardly, because of the aisle vaults; but their upper portions were exposed to the thrust of the high vault. To enable them to resist this thrust, two expedients were adopted by Durham choir. One was to strengthen the clerestory wall externally by adding a buttress between each pair of windows; the other was to construct semicircular arches at intervals spanning the triforium chamber. These, however, only sprang at the level of the capitals of the triforium arcade (402), whereas the thrust of the vault was exerted considerably higher up, viz., about the level of the sill of the clerestory; the result was that this high choir-vault fell in the thirteenth century, and had to be renewed.

IV. By the time that the builders had reached the nave of Durham, it was

[1] The danger of spread of roofs deflecting the walls is not here taken into account.

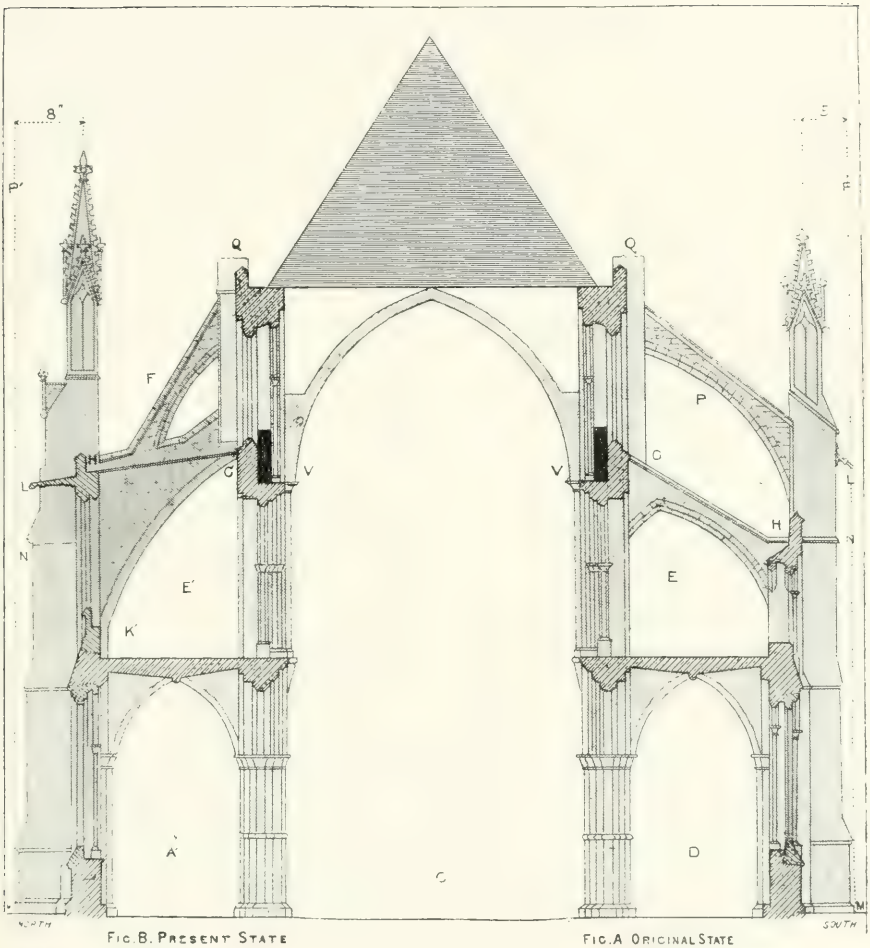


FIG. B. PRESENT STATE FIG. A ORIGINAL STATE

D. J. S

Ely Retro-choir

recognised that a mistake had been made in building the stiffening arches semicircular; and, in lieu of these, there were built in the nave half arches tilted up at one end; in fact, flying buttresses. Of these the upper end, as the illustration shows (403), abutted against the clerestory wall just where the thrust of the high vault was most felt, viz., at the junction of the triforium and clerestory. This was a thoroughly scientific expedient, and the clerestory walls of Durham nave were thereby secured and still stand safe. Precisely the same expediment—*i.e.*, the *internal* flying buttress—was employed in some of the early Gothic churches of the West of England, viz., at Wells and Salisbury (404), and originally at Worcester and Pershore.

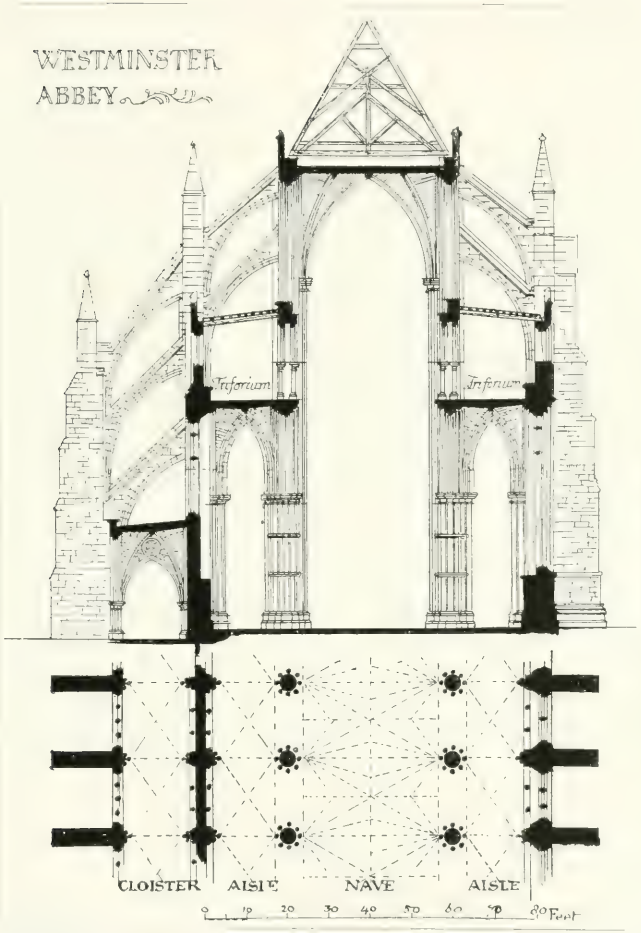
V. The above system had one great advantage; it kept the flying buttresses under cover, out of the reach of rain and frost. On the other hand, unless the aisles were made very lofty, which meant greatly increased expenditure, the abutment was only adequate for a low interior. But the tendency of Gothic architecture was to increased height; and a method of obtaining a high nave, while keeping the aisles low, was found in putting the flying buttresses, not under the aisle roof, but above it, out in the open air. This is well seen in Southwark choir (405). Here the aisle vaults are kept quite low, and massive flying buttresses rose high above them, abutting the clerestory wall high up, and allowing lofty windows (307).

In the choir of Canterbury cathedral (406) and throughout Lincoln minster (407), in addition to the external flying buttresses there are transverse arches spanning the triforium chamber: a reinforcement hardly necessary.

VI. A still more elaborate system was employed in the nave of Chichester, as remodelled after the fire of 1186 (409). Here there are two flying buttresses superposed. The bottom one, which supports the aisle roof, pitches against the clerestory wall at a somewhat low level; the upper one is unnecessarily massive and is set too high for the purpose of abutting the thrust of the high vault; on the other hand it stops the wooden roof from spreading, and also serves as an aqueduct.[1]

Originally at Ely (411), as set out in 1235-1252, there were two fliers, one internal, the other external; the former supported the aisle roof, which was at GH (as shewn on the right hand side of the diagram). The lower of the two flying buttresses takes the thrust of the high vault correctly—about the level of the clerestory passage. The upper flier seems to have been intended to take any spread of the roof, and to serve as an aqueduct, as in the naves of Chichester and Lichfield. Unfortunately, its foot was poised too high, and was found to have thrust the vertical buttress, though weighted by a pinnacle, out of the perpendicular.

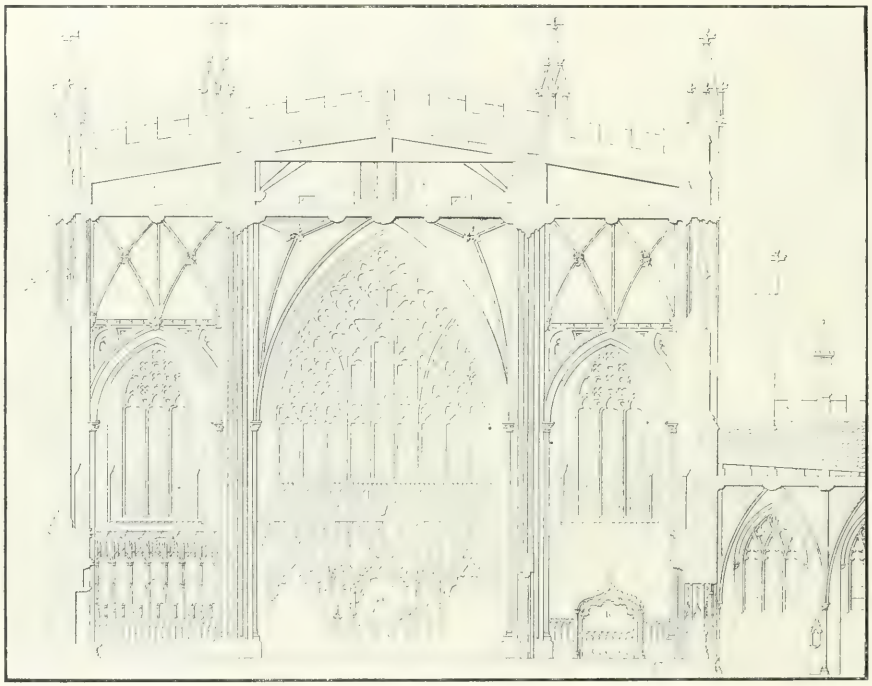
[1] In the diagram (409) those parts of the nave which were remodelled or built after the fire of 1186 have diagonal hatching. Before the fire the triforium gallery was spanned by semicircular arches. C is the clerestory passage; AM is the channel on the back of the upper flier, which discharges through the gargoyle at N. The chapels on the right were added about the middle of the thirteenth century: note how the southern cell of the vault is tilted up to allow more headway for the window.


WESTMINSTER
ABBEY
Triforium
Triforium
CLOISTER
AISLE
NAVE
AISLE
0 10 20 30 40 50 60 70 80 Feet

L. G. J

In the fourteenth century, therefore, it was replaced by the more substantial system shewn on the left, in which the centre of the shaft and pinnacle is 3 ft. nearer the church than before, while the pinnacle itself is 10 ft. higher.[1]

VII. A new system is seen on the north side of Westminster nave (413). Here the lower flying buttress springs from the floor of the triforium chamber, pierces the



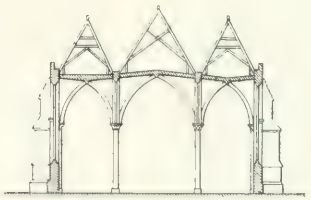
J. B. Bristol Cathedral: Chancel

aisle roof, and abuts the nave wall about halfway up the clerestory. The upper flier prevents the clerestory wall being thrust out by spread of the roof. In this nave a new complication arises. On the north (the right of the diagram) the thrusts transmitted by the fliers are taken by buttresses of great projection, which conduct the thrusts to the ground. But on the south side there is a cloister walk; and if on

[1] In the diagram (411) C is the central aisle, D the south aisle; GH the aisle roof, which is now at a much lower level; P is the upper flier whose channel discharged through the gargoyle L; Q is the stump of a pinnacle weighting the clerestory buttress QG; VV is the transverse arch of the vault of the central aisle.

this side similar buttresses had been built, they would have almost wholly blocked up this walk. Consequently the buttresses were built, not against the aisle wall, but against the outer wall of the cloister; and three fliers were built over the top of the cloister roof, the topmost transmitting the thrust of the upper inner flier, the middle one that of the lower flier, and the lowest that of the aisle vault (392).

VIII. In Bristol choir there is no difficulty about abutting a clerestory wall, because there is no clerestory wall (414). Nevertheless outward thrusts of the vault of the central aisle have to be guarded against in some way. Two precautions are taken. First, this vault is made no higher than the vaults of the aisles, in order that its outward thrusts may be counterpoised by the inward thrusts of the aisle vaults. But the central aisle is wider than the side aisles, and in consequence its vaults have a more powerful thrust than those of the latter; moreover, its vaults spring lower down and are consequently exerted at a lower level than those of the aisle vaults. This is counteracted by reinforcing each bay of the aisle vaults with a bar carried by an arch, which spans the aisle just at the level where the thrust of the central vault is exerted. Moreover the aisle vault consists, as at Fountains, of a series of pointed tunnels set transversely; and these tunnels rest on and weight the transverse bars, greatly stiffening them, and in case there should still be pressure felt from the vault of the central aisle, buttresses of enormous bulk and projection were built on to the aisle walls (398, 399).



Temple Church: Chancel

CHAPTER VII

WALLS AND ARCHES

PART I.—WALLS

VAULTS rest on walls, which are either carried straight down to the ground, or else, in the case of clerestory walls, rest on pillars and arches. Ashlar—*i.e.*, squared blocks—was very seldom used in the interior of walls; in all the Romanesque, and in most of the Gothic churches, the core of the walls consists of local rubble; ashlar, which usually had to be brought from a distance,[1] and owing to the cost of transport was very costly, was only used for the external and internal facings. Frequently, however, ashlar was not used for either of the wall faces, the whole thickness of the wall consisting of rubble, and the internal face being plastered over. Where chalk with flints was found, the wall was built of chalk faced externally with flints; in such churches the only ashlar employed was for such members as buttresses, strings, parapets, quoins, doorways, and windows. Occasionally, however, in a chalk district a parish would take pride in employing ashlar brought from afar for a late tower or porch; thus the tower of the village church of Cawston, Norfolk, is built of stone from the Barnack quarries near Stamford. Here, as always, water carriage was employed where practicable; the Cawston stone would be brought down by water to the Wash, sent round by sea to Yarmouth, and then up the River Bure to Aylsham. The cathedrals of Ely, Norwich, and Peterborough; the abbey churches of Bury St. Edmund's, Croyland, Ramsey, and Thorney

F. F. Fountains Nave: from South-east

[1] Lincoln minster is an exception; the stone was obtained a few yards away to the north.

were all built of Barnack stone. In the Romanesque work of the South of England Caen stone was largely employed; also stone from Quarr in the Isle of Wight.

In early Norman work, *e.g.*, in the west front of Lincoln, and at Blyth (418), Chester (757), and Gloucester (735), the joints are wide; William of Worcester mentions fine joints as being an exceptional innovation in Malmesbury, *c.* 1150. In the last quarter of the twelfth century fine jointing is peculiarly characteristic of the early Gothic of the West of England; nowhere is greater precision of jointing found; in Wells cathedral, Glastonbury Lady chapel, Pershore chancel, and Salisbury cathedral, the mortar joints are scarcely perceptible; a good example of fine-jointed masonry is seen round early windows at Threckingham, Lincolnshire (419).

F. B. Binham, Norfolk

Where rubble or rag was visible inside a church, whether in the walls or vaults, whether in a monastic, collegiate, or parish church, it was probably always plastered over, and on the plaster were often paintings. Good examples of painted vaults remain at Boxgrove (299), where the painted scrolls are of late date. Numerous wall paintings have been recovered of late years on removing coats of whitewash; more have been destroyed. In some cases several wall paintings have been found superposed. Remarkable examples occur on the east wall of the tower of Chaldon church, Surrey, and at South Leigh, Oxfordshire. Very frequently a gigantic figure of St. Christopher and the Child was painted opposite the doorway by which the nave was usually entered;[1] a broken statue in stone is preserved at Terrington St. Clement, Norfolk (49). St Christopher occurs in a beautiful panel of fifteenth-century glass opposite the south door at Stockerston, Leicestershire.

[1] Numerous descriptions by Mr. P. M. Johnston of wall paintings in Surrey and Sussex churches will be found in the *Collections* of the Archæological Societies of Surrey and Sussex. See also Mr C. S. Keyser's *List of Buildings having Mural Decorations.*

When one sees a vast expanse of rough, bare wall inside a church which is all glorious without, like Heckington, we may be sure that originally the walls were plastered and painted, and that the interior was even richer than the exterior:

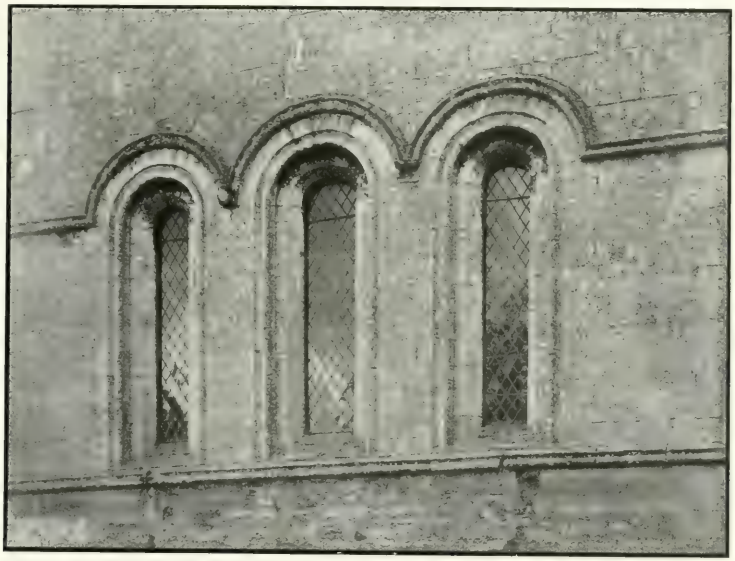
H. E. I. Blyth Nave, Notts

at Heckington, indeed, old inhabitants remember how the interior, now so desolate, was once covered with paintings. The effect of wall paintings in a Norman interior is well seen in the modern decoration of the apse of Copford, Essex (420).

The Greater churches too, *e.g.*, Salisbury chancel, had the interior painted; this

was so even in the stern Cistercian churches, such as Fountains, Louth Park, Tintern and Cleeve in our own country, and Longpont in France. Longpont has ochre-coloured plaster with false white joints; at Louth Park all the internal walls were coloured yellow and grey, and the pillars red; at Cleeve the plaster was divided by red lines simulating courses of masonry; at Tintern the whole interior was carefully covered with a very thin coat of white plaster, some of which remains; that in the south transept shows red lines drawn to imitate the joints of stonework.

Where there was good building stone near the surface ready for use, as in



F. H. C. Threckingham, Lincolnshire

Somerset and the districts of the oolites and magnesian limestone, there masonry would naturally be good; where carpentry was the local use, inferior masonry would be likely to be common. In many cases there is nothing left of a Norman wall by way of support but the thin external and internal facings of ashlar; owing to the employment inside of inferior mortar, all cohesive power has perished in the thick core of the wall; if a block be extracted, the inside will often run out like the sawdust from a doll. This was so sometimes even in Gothic work; *e.g.*, in the thirteenth-century west front of Peterborough and the fifteenth-century tower of Christchurch, Hampshire. On the other hand, excellent mortar was employed at

times; at Romsey recently it took a man two days to cut out of the Norman wall of the south transept a recess for two small safes; the core of the wall was of flint grouted with liquid mortar. So also overhanging masses of rubble may often be seen, prevented from falling by the tenacity of the mortar, *e.g.*, at Binham (417) and Fountains (416). The cores of Norman piers are also frequently rotten. To reduce the area of the Gothic piers it became usual to construct them throughout in ashlar; only, however, where the piers were of comparatively moderate dimensions.

C. F. N. Copford, Essex

So long as rubble cores were employed, both walls and piers naturally had to be thick; at Durham, which was set out for vaulting in 1093, the aisle walls are nearly 7 ft. thick; at Christchurch, Hampshire, set out about the same time, the walls of the aisles, which apparently were originally not vaulted, are 5 ft. 7 in. thick. Some portions of the main walls of Winchester cathedral are 10 ft. thick. The clerestory wall of Durham choir is about 6 ft. 3 in. thick; it is remarkable that thickness of walling persists in the early Gothic of the West of England; *e.g.*, the clerestory wall of Wells cathedral is 6 ft. $2\frac{1}{2}$ in. thick; that of Salisbury, a loftier cathedral, nearly 7 ft. thick. In later work the walls were sometimes very thin; at Patrington, East Yorkshire, where vaults were contemplated, and in part built, in the aisles, the walls are but 2 ft. 3 in. thick; not far away, at Hedon, the aisle walls are but 2 ft. thick; in both the walls are pierced with large traceried windows: Hedon nave dates from the first quarter of the fourteenth century; Patrington nave was begun but a few years later.

As regards foundations, there was both good work and jerry building. At Ely the monastic chronicler relates that Alan of Walsingham, being ready to commence

the central octagon, "measured out eight positions (for the piers of the octagon) and caused them to be dug out and examined, until he had found the solid rock, on which the foundations of his work might be securely fixed." Below Hereford cathedral is deep gravel; on this were built foundations 5 ft. deep, their stones rough from the quarry and in seven courses; the breadth of the foundation wall is about 4 ft. greater than the bases of the piers which stand upon it; two of these foundation walls appear to extend the whole length of the cathedral from east to west. At Peterborough, on

C. F. N. Copford Apse

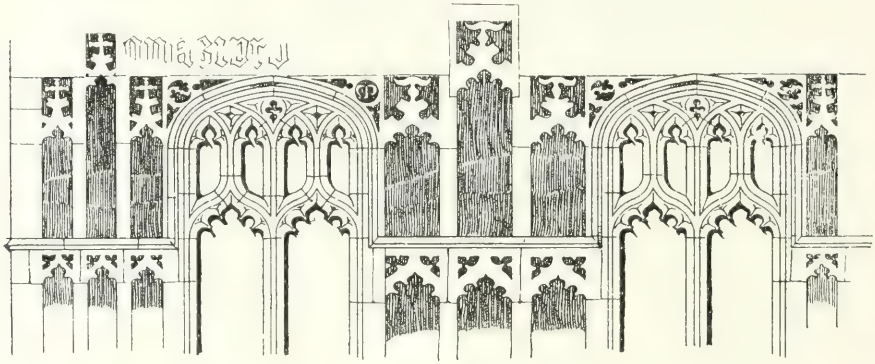
the other hand, in the Norman work, the west front and the eastern chapels alike, the foundations were shallow and not carried down to the rock, though it is at no great distance. At St. Mary Redcliffe, Bristol, the foundations of the tower, on which a lofty spire was afterwards built, are 9 ft. 3 in. deep; "first, lumps of Pennant stone had been thrown down with no cement whatever, but wedged tightly and brought to a level top; then came coursed masonry of lias, still without cement; and on this rested half a dozen courses of cemented lias." In marshy sites the church was sometimes built on piles. The monk Felix says that Ethelbald, King of the Mercians, built a monastery at Crowland in 716 in honour of St. Guthlac:

"*Et cum tam mollis, tam lubrica, tam male constans*
Fundamenta palus non ferret saxea, palos
Præcipit infigi quercino robore cæsos;"

which Camden translates:

"*But when the trembling fens, the faithless moor*
Sinking betray'd the stony mass they bore,
At his command huge posts of lasting oak
Down the soft earth were for a basis stuck."

At Winchester the retro-choir is built on two layers of beech logs—hundreds of them laid horizontally across a bed of chalky marl below which is a bed of peat. At Hull also the heavy central tower of Holy Trinity church rested on big beams, some of which were recently found quite sound. As regards



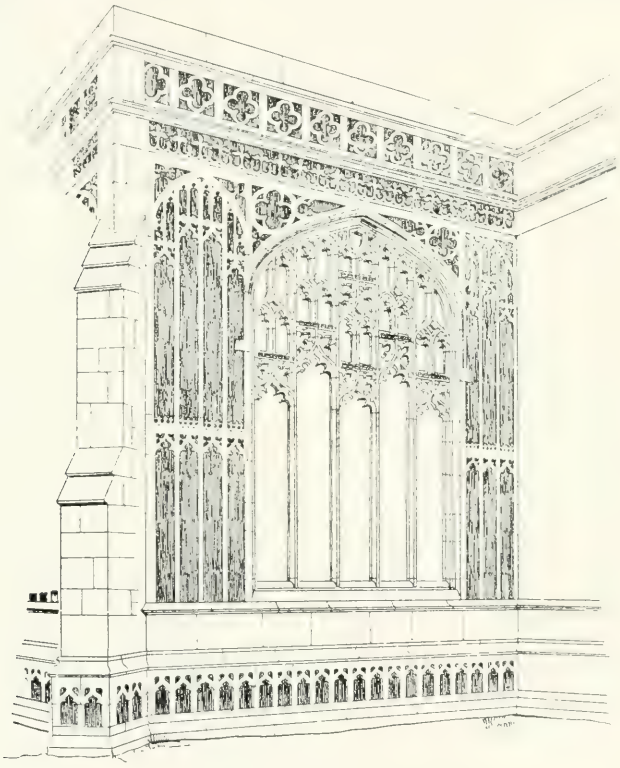
F. G. F. H. Saxmundham Clerestory, Suffolk

the foundations of the piers, diversity of practice prevailed. Commonly they were built on detached blocks of foundation; *e.g.*, in the Cistercian abbey of Waverley; in good work they were built on continuous foundations; *e.g.*, in the Cistercian churches of Beaulieu and Hayles, in Lincoln nave, and in Furness Chapter house. In the last two sleeper walls were also built from the piers to the outer walls. Westminster abbey has excellent foundations, and has stood admirably; probably the masonry of the Confessor's church was utilised for foundations. Norwich cathedral, which occupies a swampy site, is said to be built on a raft of concrete.

FLINTWORK

In chalk districts, such as most of East Anglia, Kent, and Sussex, undressed flints have always been in employment in building rubble walls, such as those of

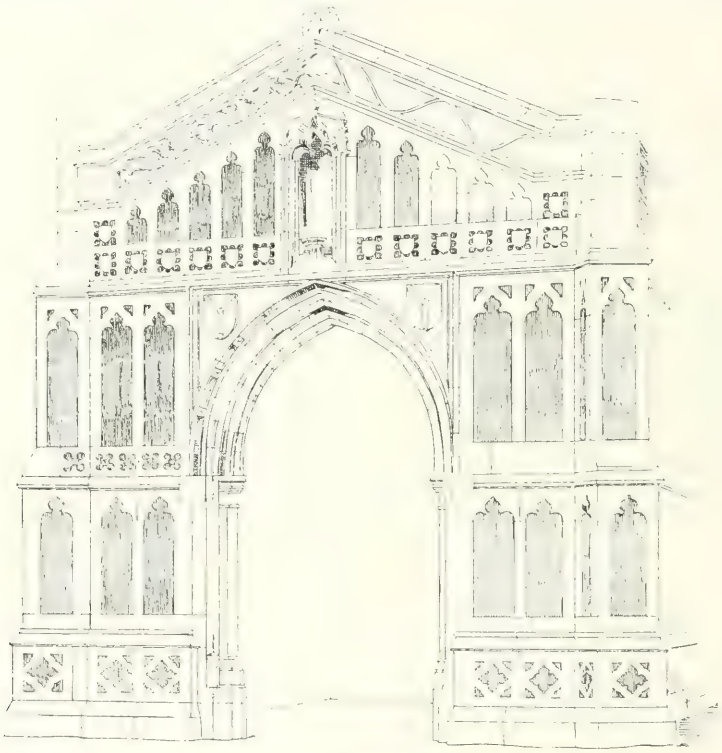
the tower of Lavenham, Suffolk (895), the best flints for the purpose being those which are picked up on the surface of the fields; such walls, to be stable, had to be at least 2 ft. thick. At certain spots, however, especially near Brandon, in the north-west of Suffolk, a layer of superior flint occurs underground. This layer is still



F. G. F. H. St. Michael Coslany, Norwich

worked, though far less than of old, for the production of gun flints; in mediæval churchwork, especially in Norfolk and Suffolk, these flints were dressed and used as a surface decoration flush with the surface in what is called "flush tracery and panelled work." To obtain the flints, shafts are sunk, some 40 ft. or 50 ft. deep, and at the bottom is found a layer of flints; galleries are then driven, as in a coal-pit, following the layer, sometimes for several hundred feet. Some of the flints are jet

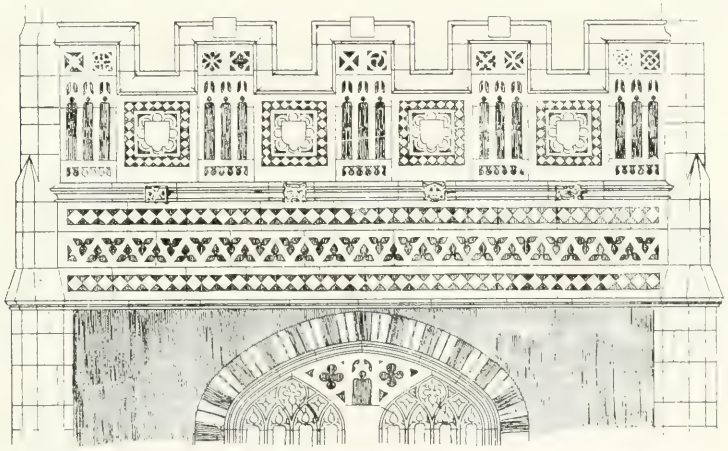
black, and are held in the highest esteem; others are grey, with a tendency to fade to white on exposure. By the aid of flaking and napping hammers the flints, after being reduced to moderate dimensions, are gradually flaked till the shape desired is obtained. The flints may be shaped into rectangular form, like blocks of freestone, as in a house in St. Andrew's, Norwich, near the cemetery, where the squared



F. G. T. H. Blythford Porch, Suffolk

flintwork is so delicately finished that a penknife can hardly be inserted in the interstices; but the difficulty and expense of the operation are so great that in mediæval days this was seldom done, the flints as prepared for use being square on face and conical behind. Dressed flints as used in the East Anglian churches seldom average more than about an inch and a half in depth, nor is the stone framework, in which they are usually set, much thicker: freestone facing and flint

panelling were but superficial decoration, applied much as mosaic; and the former was not bonded, or bonded but little, into the wall; only by the employment of excellent mortar has this decorative skin been enabled to survive. It was employed in two ways. One was to construct the facing of flint, and in this flint to insert patterns in freestone; this is the method employed at St. Michael Coslany, Norwich (423), and in the parapet of Long Melford church, Suffolk. The other, and the better and more usual way, was to construct the facing of freestone, and to insert in this patterns composed of black flints. This flush tracery is almost peculiar to Norfolk and Suffolk, though simpler decoration occurs elsewhere in chalk districts, such as the chess-board patterns of the tower of Steyning church, Sussex (888).



F. G. T. H. Woodbridge Parapet, Suffolk

It has been held that flush tracery is always of late date; the chief examples which can be dated being St. Peter Mancroft, Norwich, finished in 1455; Southwold, finished in 1460 (901); Saxmundham, finished in 1483; Walberswick, built between 1472 and 1493; some flintwork at Lavenham bears the date 1473; the aisle and porch of Wetherden, Suffolk, are said to be of 1483; Long Melford was begun in 1497; Lavenham nave is later still. On the other hand, the house in St. Andrew's, Norwich, referred to above, has traceried panels of fourteenth-century character; nor is it likely that such elaborate work as that of the mid-fifteenth century was arrived at without a long course of preliminary experimenting.

Flush tracery is found almost everywhere on the exterior; *e.g.*, in the clerestories of Earl Stonham (897) and Saxmundham (422); between aisle-windows, and on the face of the buttresses, *e.g.*, Lowestoft (2); it is very common as a ground-course,

especially to towers; some of the richest design occurs in parapets, *e.g.*, Woodbridge (425); occasionally, however, as in Blythford porch (424), the parapet is of freestone. It is very common in towers; *e.g.*, Southwold (901) and Lavenham (895); and, as an elaborate porch was often the last contribution to the church, it is usually ornamented with flush tracery and panelling in flint; fine examples are seen at Blythford, Southwold, and North Walsham.

Much of the flint or freestone tracery is but a repeat of that of the windows

F. H. C. Lower Peover, Cheshire

and screens; but many other geometrical and flowing patterns occur, in addition to crosses, crowns, anchors, the initials M or IHC, or mottoes or whole texts; over the doorway of Southwold church is S EDMUND ORA P NOBIS; the church is dedicated to King Edmund. Great use is made of diaper, both square and lozenge-shaped.[1]

[1] On the whole subject see the paper by Mr Frank Baggallay, F.R.I.B.A., on "The Use of Flint in Building, especially in the County of Suffolk," in the *Transactions* of the R.I.B.A., vol. i. p. 105; The *Dictionary* of the Architectural Publication Society, article, "Flintwork"; *Proceedings* of the Archæological Institute at Norwich in 1847; and *Reports* of Associated Architectural and Archæological Societies, vol. i. p. 85.

WOODEN CHURCHES

Timber churches were probably far more common than at present, especially in woodland districts. Of these the oldest is at Greenstead, Essex, where the walls of the nave are composed of halved logs, set vertically in a frame: this nave is probably of Pre-Conquest date. Occasionally not only the walls but the pier arcades are of wood, as at Warburton (428) and Lower Peover,

F. H. C. Marton, Cheshire

Cheshire, either frankly built in post and rail fashion or aping the arcuated construction of a stone church. The exteriors of the above churches are illustrated, as also those of Marton and Seddington, Cheshire. A good fifteenth century example remains at Claverley, Salop. Such churches naturally occur most often in counties in which half-timbered halls are most common: *e.g.*, Cheshire and Salop. Timber spires also are common in all woodland districts.

L. G. B. Lower Peover, Cheshire

J. L. Warburton, Cheshire

F. H C. Siddington, Cheshire

J. L. Warburton, Cheshire

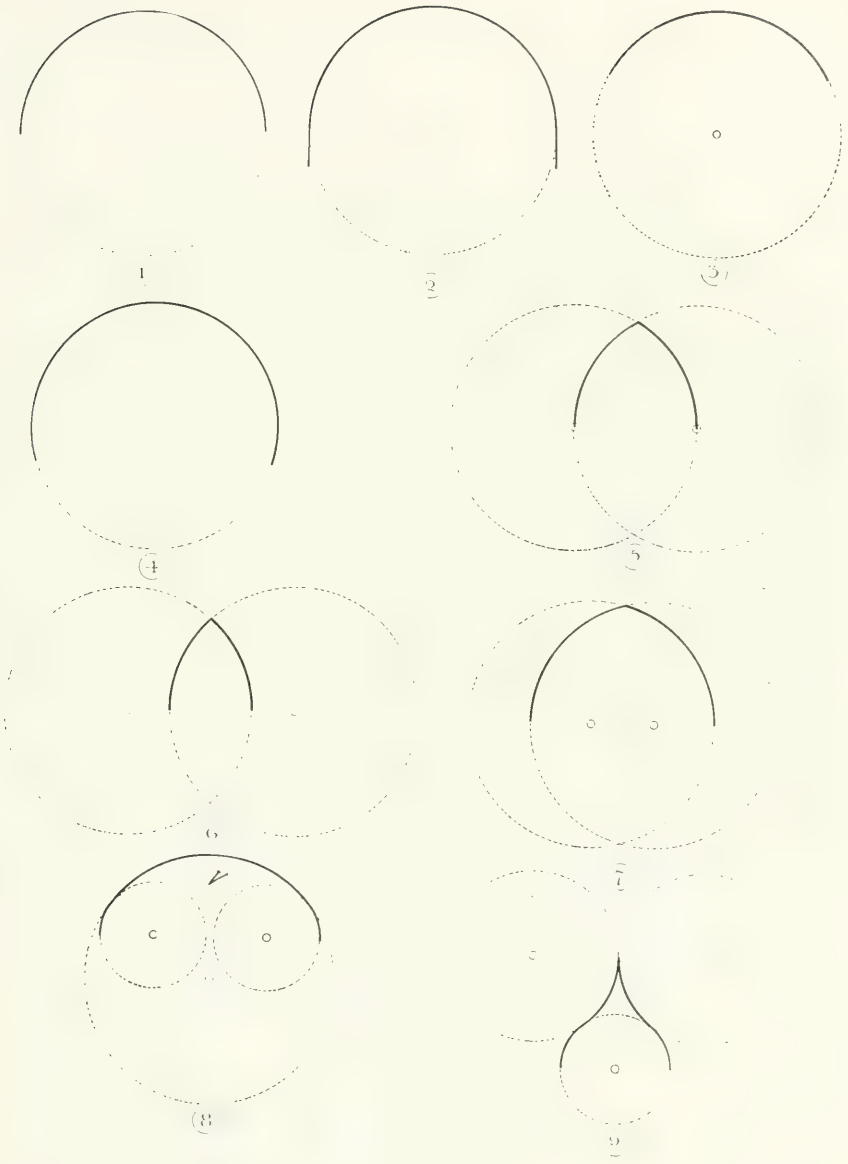
PART II.—THE ARCH

In the early Christian basilicas the aisles were separated from the nave by colonnades, and the space from column to column was bridged over by a horizontal entablature, *i.e.*, architrave, frieze, and cornice, or by an arch. The former method, borrowed from the Greeks by the Romans, is constructionally bad where the openings are large; for long blocks of stone, supported only at the ends, are liable to be fractured by superincumbent weight; it was, moreover, an expensive method of construction; for long blocks were difficult to quarry, to transport, and to lift into position; none of which difficulties existed in an arch composed of small voussoirs. *Arcuated*, therefore, very properly superseded *trabeated*, *i.e.*, lintel or beam construction.

J. F. H. Winchfield, Hants

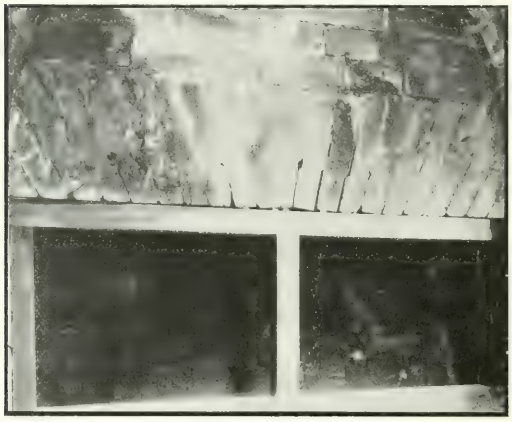
An arch is constructed, wholly or mainly, of wedge-shape blocks, *voussoirs*, and the joints between them radiate from the centre, being at right angles to the curve of the arch. Each voussoir helps to key the arch, but the term *keystone* is generally restricted, in other than pointed arches, to the central voussoir; pointed arches almost always have a central joint and no keystone. If desired, two or more of the lower courses of the arch can be built up in horizontal courses like the courses of a wall; and they are bonded into the masonry behind them. If we take the example of an arch with four lower courses so constructed, it will be seen that all the joints of these four are horizontal, except the uppermost surface of the top block; these blocks, therefore, are not voussoirs, and do not form part of the arch, which only commences above them. In this method of construction as many courses as possible are built by this system of *corbelling* till the slipping point is reached;[1] the span of the real arch is thereby reduced, less centering is required,

[1] In ordinary building stone the slipping point is usually an angle of about 30°.



and the bottom courses are more stable than if radiating. Of the bottom courses the uppermost differs from those below in having its upper surface sloped; this uppermost course is termed a *skewback*.[1] Thus, starting at the bottom of an arch, the first, second, and third courses may have both upper and lower joints horizontal; the skewback has the lower joint horizontal, but the upper joint sloped; while all the courses of the arch proper have radiating joints.

In Roman work, and in mediæval work up to the twelfth century and sometimes later, only the *semicircular* arch and its variants were employed (431). This arch has but one centre, which is situated halfway on the diameter (1). If less than the semicircular arch is employed, the arch is termed *segmental* (3); if more, it is a *horseshoe* arch (4). Sometimes an arch is raised on a few courses of horizontal masonry: it is then said to be *stilted* (2). Stilted arches are common in an ambulatory, where the arches are much narrower than those on the north and south side of the sanctuary, and, being semicircular, would be much lower if they were not stilted, *e.g.*, Norwich (130); also where the arches leading into transepts are narrower than those leading into the nave and choir, they are sometimes stilted, *e.g.*, at Sherborne (770); so also in vaults, *e.g.*, those of Peterborough aisles (296), the narrow arches, *i.e.*, the transverse, are stilted to bring them up to the level of the diagonal arches.



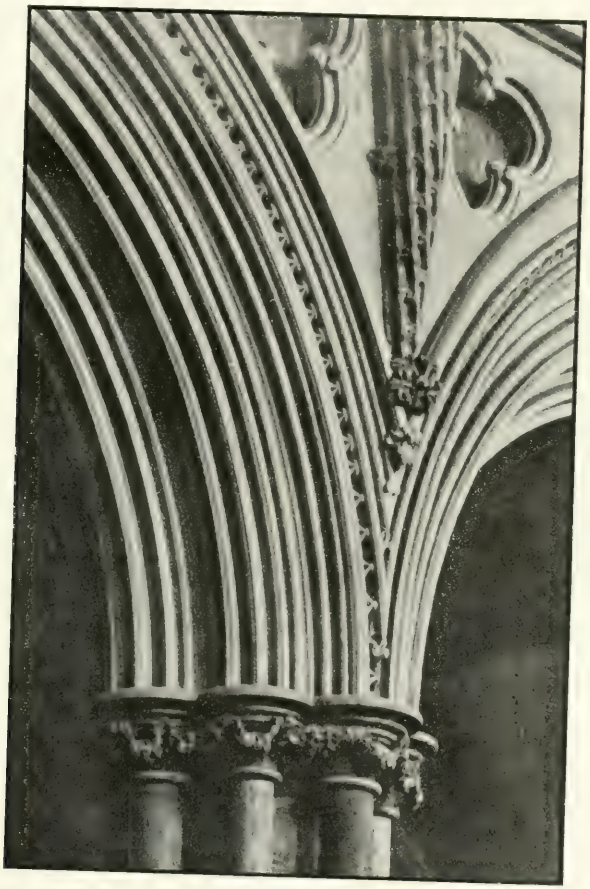
I. B. Fountains Abbey: Calefactory

Pointed arches are either simple or compound; the former having but two curves, the latter three or four. The semicircular arch with its variants forms a part of one circle only; but the simple form of pointed arch contains portions of two circles of the same radius, and is therefore struck from two centres. These two centres are on the base of the arch or the base produced to right and left; and the form of the arch may be changed at will by changing the position of the centres. If the two centres coincide with the ends of the base of the arch, the arch will be *equilateral* (5); if they are inside the base, it will be an *obtuse* arch (7); if they are outside the base, it will be an *acute* or *lancet* arch (6).

The adoption of the pointed arch turned out to be of enormous importance in

[1] Skewbacks are seen in the springers of the vault of Southwark chancel (307).

mediæval architecture. It is true that with various forms of the semicircular arch, aided by stilting, almost all the difficulties of vaulting had been grappled with successfully; *e.g.*, in Gloucester ambulatory (278): but the employment of the pointed



E. I. G. Ely Presbytery

arch provided a far more simple and scientific solution of the constructional problems. Among its chief merits was its elasticity of form. If a semicircular arch was employed, its height was controlled by its span; it had to be neither more nor less

high than half the span; but without changing the span of a pointed arch, it could be made to rise either as high or as low as was desired; and, conversely, without changing the height, it could be made as wide or as narrow as was desired. Secondly, a much heavier load could be set on a lofty than on a low arch of the same span. It is plain in the diagrams that the arch (5) would carry a heavier load than (1) and (1) than (3). If a pointed arch of lancet character were selected, it would have great supporting power (6). Thirdly, compare the segmental arch (3) with the lancet arch (6); every arch has a tendency to thrust outwards, a tendency which is increased the more masonry is piled on it; but the former has evidently a much greater outward thrust than the latter; the more vertical the curves of an arch, the less the thrust.[1]

T. R. Wycliffe, Yorkshire

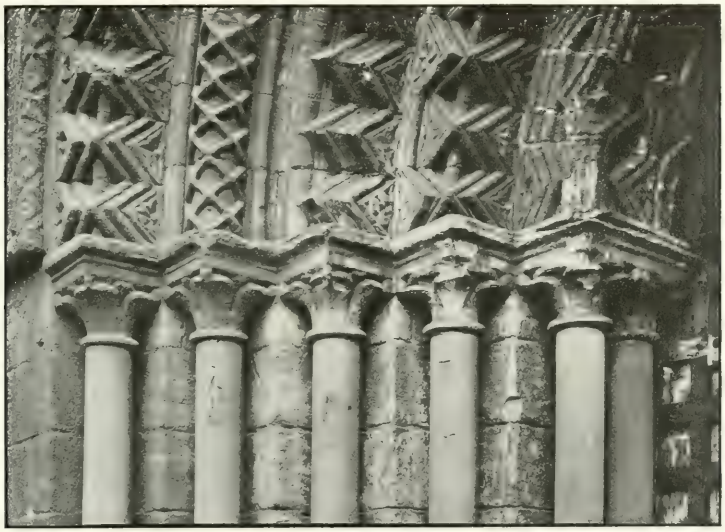
In the East the pointed arch has been in use from time immemorial; and it has been thought that it passed from Egypt to Sicily, and from Sicily to Provence, where it is employed profusely in churches to which exceptionally early dates were given by M. Revoil.[2] Recent investigation proves, however, that the Romanesque of Provence, so far from being the earliest, is one of the latest of the Romanesque schools; few of the Greater churches being earlier than the middle of the twelfth century.[3] There can be little doubt that the pointed arch was invented independently in Western Europe, and in more places than one, early in the twelfth century. In England it first occurs on a large scale in the vault built over Durham nave in 1128-1133; where the transverse arches of the vault are pointed in order that they may rise to the same height as the diagonals (746). In the Burgundian school of Romanesque, the normal vault for a nave was a tunnel vault; and it was early perceived that the dangerous thrust of such a vault against the clerestory walls could be reduced by substituting a pointed for a semicircular tunnel vault, thus bringing the thrust down more vertically. The great abbey church of Cluny was commenced in 1089, and its choir was finished in 1095; the southern choir-transept still stands, and

[1] For a mathematical explanation of the thrusts of arches of varying curves see *Architecture for General Readers*, by Mr H. Heathcote Statham, text, pages 89 and 90, and diagrams 84-87.

[2] In his *L'Architecture du Midi.*

[3] See proceedings of *Congrès Archéologique à Avignon*, 1909.

can be but little later than the choir; not only its tunnel vault but its pier arches also are pointed; so also they are at Paray-le-Monial,[1] a daughter-church of Cluny, some part of which was dedicated in 1104; so they are again in Autun cathedral, 1120-1132; it is plain that the pointed arch was in constructional use in Burgundy in the pier arcades and elsewhere not later than the beginning of the twelfth century. When therefore the great Cistercian order arose in Burgundy, it found there the pointed arch a main feature in construction; and when it commenced its early abbeys in England, *e.g.*, Fountains,[2] 1135 (416), Buildwas, 1147, Kirkstall, 1152, it



F. H. C. Selby Porch

employed the pointed arch in the pier arcades. In all probability the Cistercian precedent had much weight throughout England; it is possible, however, that the Benedictine monks of Malmesbury built the pointed pier arches of their nave *proprio motu*, *c.* 1150 (738). For a considerable time the pointed arch was only employed in England where it had constructional value, doorways, windows, and arcading remaining semicircular; of this New Shoreham is a late example (740, 389). To the Western school of Gothic, *e.g.*, Wells cathedral (754), belongs the credit of completely extirpating the semicircular arch as early as *c.* 1175; just about the

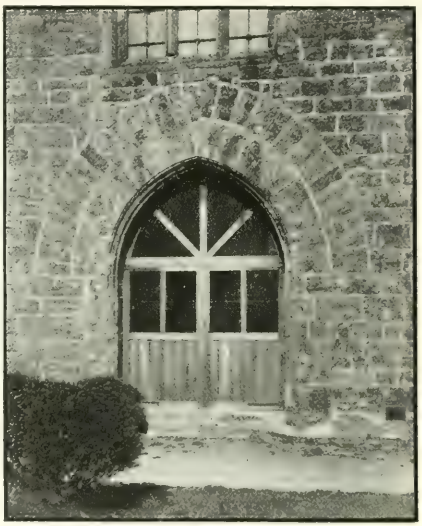
[1] For section of Paray-le-Monial see Choisy's *Histoire d'Architecture*, ii. 217.

[2] In the pier arcade of Fountains nave the aisles were vaulted with pointed tunnel vaults set transversely; the transverse arches of these vaults, however, and the windows were left semicircular (283).

time when William of Sens was setting out the choir of Canterbury with a heterogeneous mixture of pointed and semicircular arches. Lincoln choir was designed in 1192, like Wells, with pointed arches only (584). After this semicircular arches occur only sporadically, several in the thirteenth, a few in the fourteenth century; they are particularly common in doorways, where the arch of the doorway is in close proximity to a window above; *e.g.*, in the south transepts of Hedon and Beverley.

One of the great merits of the pointed arch was that it could easily be made

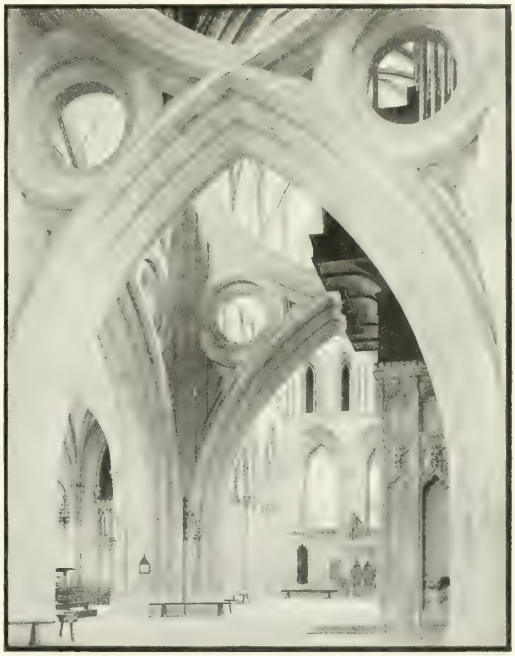
F. B. Segovia



J. B. Etchingham, Sussex

very lofty. Sometimes, however, it was necessary to have an arch very low, for lack of headway. In such a case there was a choice of several forms. (1) A *segmental* arch might be employed; *e.g.*, above the Norman doorway of the south transept of Southwell, and at Lilleshall (703). (2) An *obtusely pointed* arch might be employed; *e.g.*, in the naves of Fountains (416), Malmesbury (738), and Leominster doorway; or (3) a *three-centered* arch (*arc en anse de panier*); *e.g.*, in Alcock's chapel at Ely; this is very common in French-Gothic, but rare in English (431.8). Or (4) an *elliptical* arch might be preferred; such an arch, however, is difficult to set out; and where it does occur, *e.g.*, in the chancel arch of St. Margaret, Durham, its form may be due to settlement at the crown; it is in common use in modern stone bridges.

(5) In the end, whenever a depressed arch was wanted, the English masons almost always preferred the *four-centered* arch, which is but an obtusely pointed arch incurved at the spring; it also occurs abroad, but less often (439). As the diagrams shew, its four curves usually form parts of four separate circles (12, 13). If the upper are near the lower centres, the arch will be lofty; if they are far apart, it will be low; as the simple pointed arch quite well provides a lofty arch, the latter is the more common type of four-centered arch. Variants also occur. Sometimes both the lower curves are parts of the same circle, in which case the arch has but three centres, as in the pier arcade of Winchester cathedral nave (14). In late work the upper curves are often replaced by straight lines; or both upper and lower may be straight but rounded off at the junction (107). The depressed type of four-centered arch, though weak, was sometimes used in pier arches; *e.g.*, in St. George's, Windsor, Bath abbey church, Chipping Campden, Gloucestershire, and Mold, Flintshire. It is used in the transverse arches of the vault of the Divinity School, Oxford (343).



I. F. H. Wells: Crossing from South-east

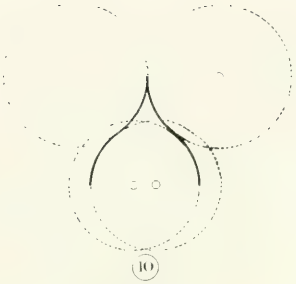
Foiled arches were of little constructional value, but were in great vogue in decorative arcading. Normally they have three lobes or foils (*folia*), the upper one of which may be either rounded or pointed (15, 16). In the west front of Ely they are seen in superposition (440); sometimes they alternate; in Beverley triforium tall trefoiled arches are set in front of low pointed ones (762); frequently a trefoiled arch is inserted inside a pointed arch; such a combination is termed a *pointed trifoliated* arch (17). A variant has the crown horizontal; this is the *shouldered* arch; it is useful in doorways in reducing the length of the lintel; it is used profusely in Carnarvon castle; in small openings this is often not an arch at all, but a corbelled lintel (434).

In the calefactory or warming-house of the Fountains' monks, and often in kitchens and doorways, there is a *horizontal* arch with joggled joints (432).

In the last decade of the thirteenth century appeared another decorative arch, which had an immense vogue between *c.* 1315 and *c.* 1350, nor indeed did it ever go out of fashion throughout the later Gothic period; it appears, perhaps for the first time, in the Eleanor Crosses, 1291-1294. The *ogee* is a compound arch; but differs from the other compound arches in that two of its curves are reversed; its two upper curves being struck from centres above the arch. Thus the two upper curves are

C. F. N. Rushden, Northants

hollow, concave; while the two lower are incurved, convex (439.10, 11). Occasionally, like the four-centered arch, its two lower curves are struck from the same centre (431.9). It may be very tall or very low; both forms are pleasing; a much depressed ogee arch is common in woodwork, *e.g.*, in oak screens, and in window tracery, where it can be protected by a discharging arch above (623). When worked in stone, *e.g.*, in canopies over tombs, the tall form is common. In the later Gothic a truncated variant of it, which may be called the *concave* arch, is very common; in this the lower curves are omitted altogether; *e.g.*, as in the canopies of Sugar's chantry in Wells cathedral (107). All forms of the ogee arch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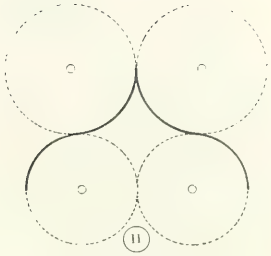
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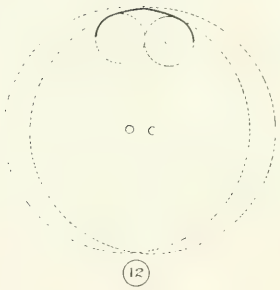
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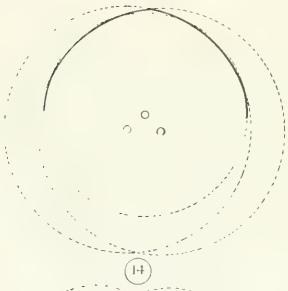
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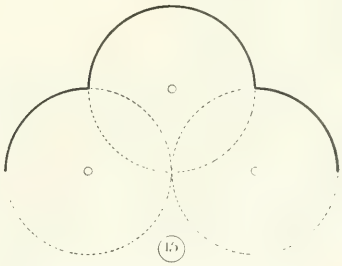
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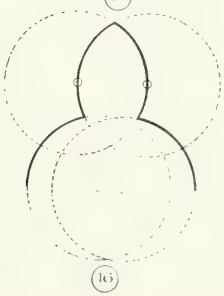
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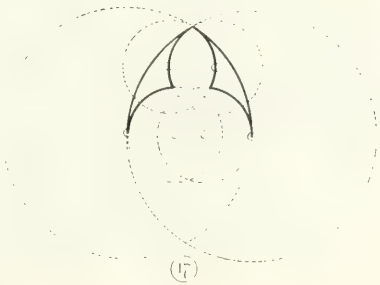
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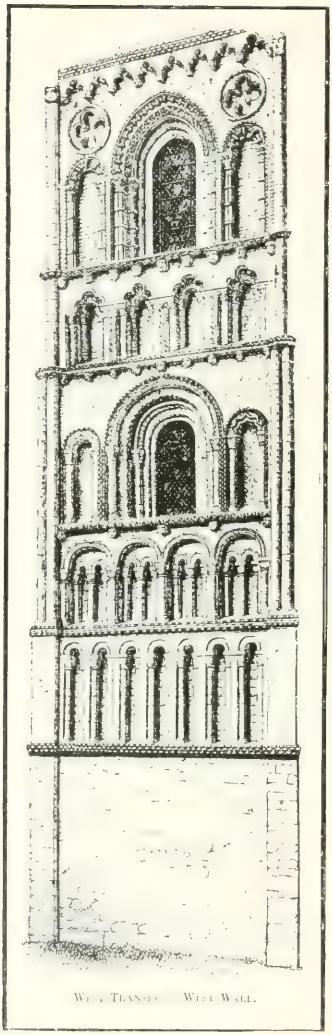


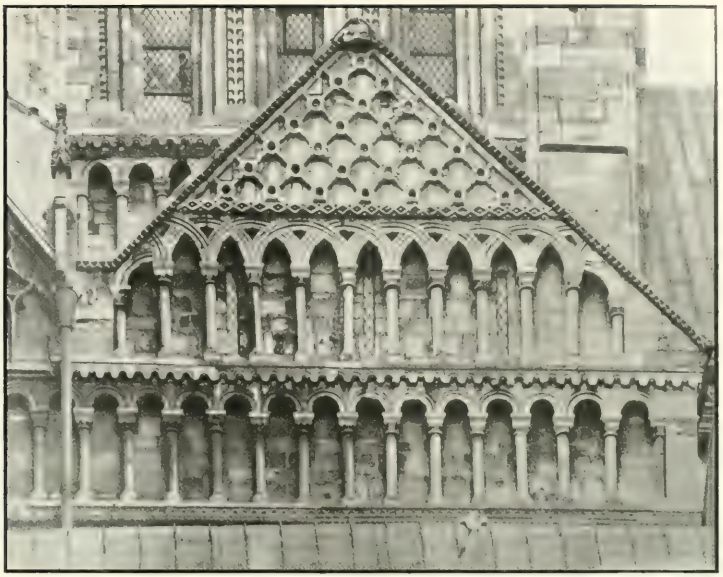
D. L. S. Ely Cathedral

are of course constructionally weak; yet it occurs now and then in the heads of windows and doorways. It was greatly used in fourteenth-century window tracery; *e.g.*, at Higham Ferrers (631) and the Beverley reredos (629). The ogee arch occurs in great abundance in the East in early days; but here again we shall do well to be suspicious of the architectural genealogist; in window tracery of simple geometrical character a circle superposed on two lancet arches almost irresistibly suggests an ogee arch, as in the gable window of the north transept of Hereford cathedral.

One of the most graceful variants of the ogee arch is that in which the lower curves are so constructed as to bow forward; *e.g.*, in the arcading of the Lady chapels of Lichfield and Ely (454), the Percy tomb at Beverley, and the Alard tombs at Winchelsea.

CONSTRUCTION AND ORNAMENTATION OF ARCHES

When an arch is of moderate span, and when it has little weight to carry, it may be built of a single ring or order of voussoirs; *e.g.*, at Lastingham (82) and Chester (757). Where such an arch is inadequate, it may be strengthened by deepening the voussoirs; in parts of Spain where long blocks are to be had, *e.g.*, Segovia, the voussoirs may be 3 or 4 ft. deep (436); in Roman and Byzantine work long tiles were sometimes employed, *e.g.*, in S. Sophia, Constantinople; as also at Porchester, Hants, and Colchester, Essex. But in such a case, if one of the long voussoirs slip, the whole arch is endangered; so it was more customary, where exceptional strength was wanted, to build two or more arches superposed, employing in each voussoirs of moderate size; such superposed arches, built of brick, may be seen in any railway bridge or viaduct: the west doorway of Etchingham, Sussex, is similarly constructed, but in stone (436). Each of these rings or sub-arches is



S. S. Lincoln : South Gable of Norman Façade

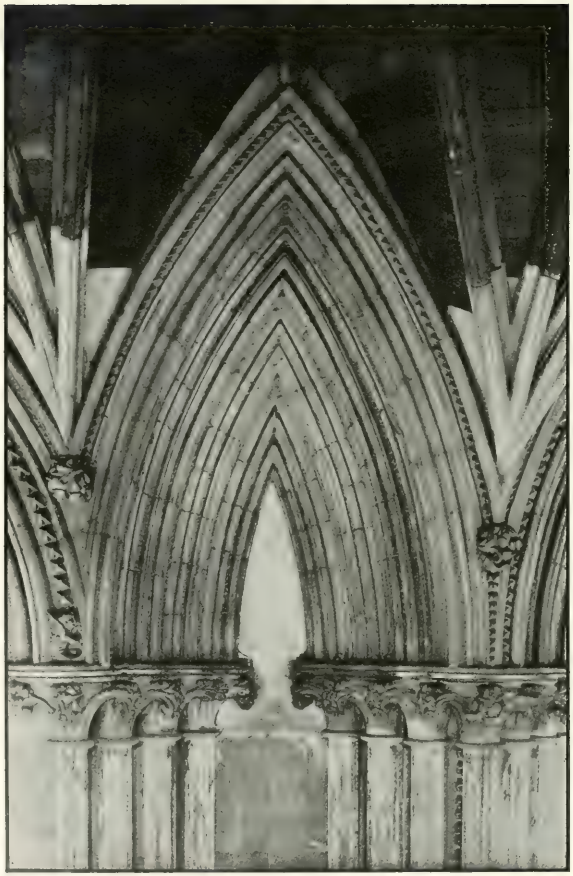
H. L. M. Christchurch, Hants

called an *order*.[1] In these railway arches the faces of the orders are generally in the same plane; but in mediæval architecture the orders are usually *recessed*; *i.e.*, the bottom or innermost order is narrow, the order above it is broader, the next order is broader still, and so on. Probably the object of recessing the orders was to economise planking in making the *centres* or temporary wooden arches on which the masonry arch was built, planks being difficult to make before the invention of the circular saw driven by water-power or steam. Suppose that it was desired to build a very strong arch, say 8 ft. broad, and that it was built like the Etchingham doorway, in unrecessed orders, *i.e.*, consisting of eight arches or sub-arches, all with their faces in the same plane; for such an arch wooden centering 8 ft. broad would be required. But if it were built in orders, each projecting beyond the order below it, the wooden arch or centre, and the first order of masonry resting on it, might be only 2 ft. broad; the second order from the bottom might be 4 ft. broad; the third 6 ft. broad; the fourth 8 ft. broad; and so an arch 8 ft. broad might be obtained by using centering 2 ft. instead of 8 ft. broad. Both forms of compound arch — the unrecessed and the recessed — were in use in ancient Rome, both in brick and masonry, and were probably copied by the mediæval builders from existing buildings. In mediæval work they are usually of stone, but in St. Albans are of brick from the neighbouring Roman town of Verulamium. That the Romans really experienced difficulty in providing centering is clear from the curious construction of the bridge over the Rhone at Avignon, a portion of which remains. This is built of a series of narrow arches built side by side, and not bonded together; when one arch had been completed, the centering would be taken down and re-used to support the adjoining arch. Not far away, at Nimes, is another Roman building whose ceiling rests on a series of narrow arches 2 or 3 ft. apart. These were built up level, and then slabs were poised on each pair of walls, giving a horizontal stone ceiling; it was by this method also that the fifth and sixth-century churches of Syria were constructed.[2]

H. E. I. Bolton Priory, Yorkshire

[1] The term is an unfortunate one, but is now in too general use to be got rid of; it properly applies to the Greek orders or varieties of columnar architecture, Doric, Ionic, and Corinthian.

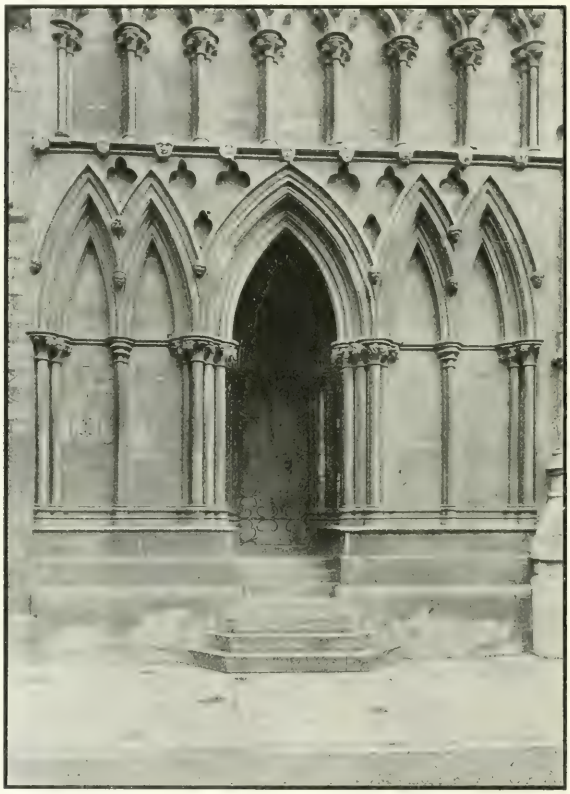
[2] For arches of two orders see Blyth (418) and Bere Regis (806). For arches of three orders see St. John's, Chester (742), and the transept of Chester cathedral (47). At St. Peter's, Northampton, the pier arch on the left is of one, the tower arch of three orders (466).



S S Lincoln : Arcading of Chapter House Doorway

S S. Lincoln Nave

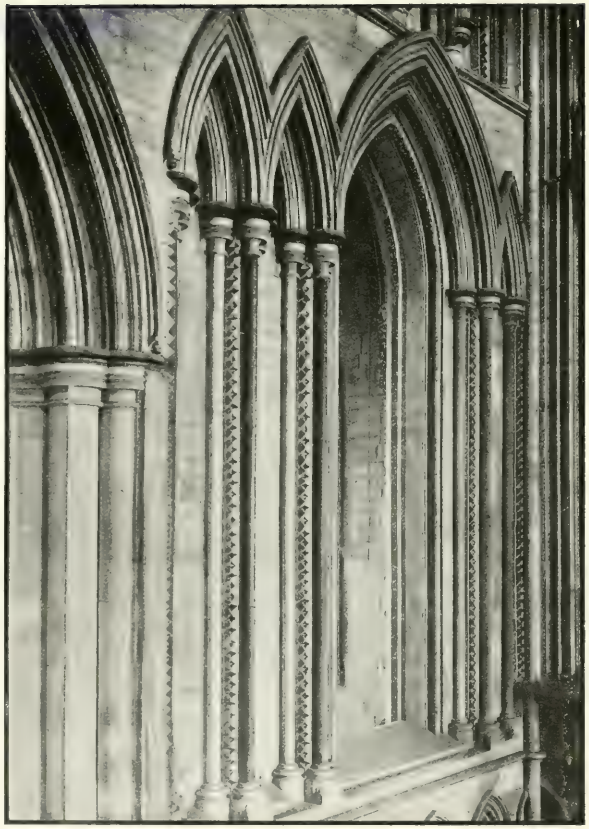
Brick arches, of course, were square edged; so also were the oldest arches of stone. It was one of the fashions of the Western school of Romanesque, *e.g.*, St. John's, Chester (742), not to mold the pier arches but to leave them square edged. But when the voussoirs were dressed in a quarry, perhaps far distant, their edges



Lincoln: West Front

would often be chipped in transit; and the damaged square edge would be replaced by a *chamfer*. The chamfering of the edges of the arch was as far as most of the village churches could go in the way of ornamentation; chamfered arches occurring in them in all periods of Gothic architecture, *e.g.*, at Moulton, Lincolnshire (472).

In the Greater churches two methods of ornamenting the arch were in vogue.



F. H. C. Beverley : Lady Chapel

S. S. Lincoln Minster

In both, for a considerable period, the rectangular outline of each order was preserved; *e.g.*, at Selby (435), Wells north porch, and Hedon north transept (708). The early method was to cover the face and sometimes also the *soffit*, *i.e.*, the underneath surface of the arch, with carving, *e.g.*, with zig-zag, billet, beak ornament, etc.; this was especially so in the first half of the twelfth

G. W. W. Chester Cathedral: Refectory

century; *e.g.*, at Iffley (705), where the soffits as well as the faces of the orders are carved. The effect was so rich and attractive that arches originally plain received at times carving at a later period; *e.g.*, those of the sanctuary of Hereford cathedral (744). Sometimes also little window arches were built in three or four orders, *e.g.*, at Iffley, not to gain strength, but to have so many more faces for ornament (190). The wall round a Norman doorway also was sometimes thickened in order that

the doorway arch might be built in a larger number of orders.[1] So rich and

C. H. E. Stone Chancel, Kent

effective were these arches of numerous carved orders that they were often allowed

[1] It may be also that the builders were anxious about the safety of their rubble walls if pierced with large openings. By projecting the doorway forward, that part of the splay of the doorway which came within the plane of the wall would be greatly reduced in width and height.

to remain when the rest of a church was pulled down, or were reset in new walling; *e.g.*, at Shere, Surrey (246).

But side by side another process of ornamentation was going on, which was

F. H. C. Beverley Minster: North Aisle of Choir

destined to oust the other completely, and was to form one of the most characteristic features of Gothic architecture; this was the *molding* of the faces and soffit of the arch. It probably originated in a feeling that there was a lack of harmony between the arch and the columns and shafts of compound piers. These columns and shafts

were semicircular, and by repeating them in the form of large or small rolls on the arch, unity of design was introduced into the arch and its supports. So again, the ribs of a cross-ribbed vault like that of the aisles of Peterborough (296) consisted of rolls, and coming as they did into juxtaposition with the pier-arches, the latter could hardly fail to be designed in accordance with them. Rapid development of molding is seen on comparing the square unmolded pier-arches of Winchester

F. H. C. Beverley Minster: South Aisle of Nave

transept, *c.* 1090 (61), with the heavy rolls of Whaplode (191), Christchurch (467), and Peterborough (296), and the small delicate rolls of Norwich choir, where the system of moldings was highly advanced.[1] After this the development went on but slowly and intermittently, till there is a sudden jump in 1192 to the elaborate moldings of Lincoln choir. From this time, and frequently as late as the middle of the fourteenth century, the moldings were worked on the rectangular face and

[1] At Nettleton, Lincolnshire, there is an early instance of an attempt to give a plain arch a simple decorative molding. Some time after it was built, a roll molding was begun on the edge of the voussoirs, but was abandoned when half completed, probably owing to the difficulty of working it in position.—A. H. T.

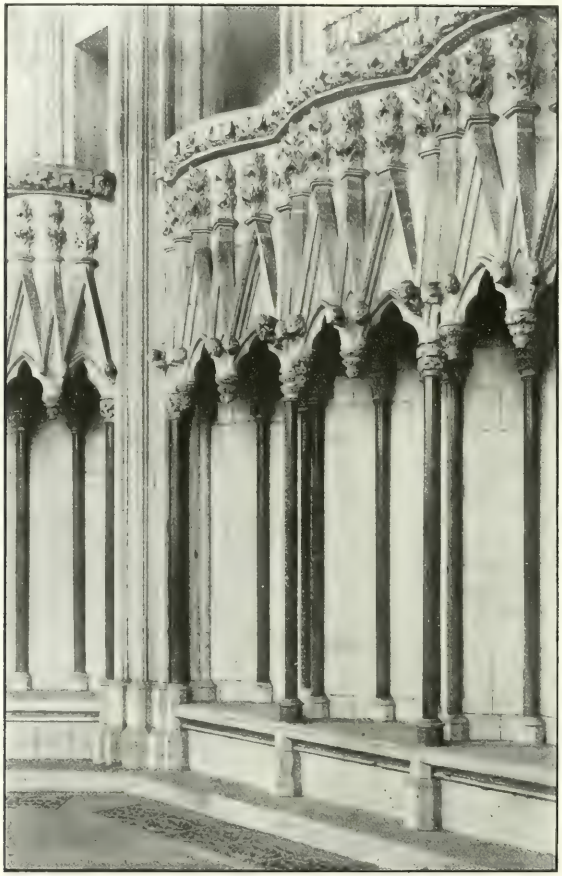
F. R. P. S. Salisbury Chapter House

soffit of the order; but from about the middle of the thirteenth century, it became customary first to chamfer away the edges of the order, and then to work the moldings on the *chamfer plane*, *i.e.*, the slope; in late Gothic this is invariably so. Again, in Norman work the rolls are usually semicircular, and the hollows between them segmental or semicircular; but by the thirteenth century it became usual to undercut these hollows on either side in order to get pits of shadow. Also the rolls

F. B. Southwell Chapter House

in the latter half of the twelfth century, like the shafts of the piers, were often *keeled*, *i.e.*, pointed like the keel of a boat, or were *pear-shaped*; the next step was to give them a single, and later, a double or triple *fillet* (486). Moreover, up to the middle of the thirteenth century the rolls were, as a rule, small and consequently numerous; and alternations of rolls and hollows (which is what we mean by *moldings*) of remarkable refinement and elegance were obtained; *e.g.*, those of Ely presbytery (433) and the doorway and arcading of Lincoln Chapter house (443).

In later work[1] rolls once more became large and few; and the hollows shallow;



A. P. York Chapter House

a very broad segmental hollow, called the *casement*, is especially characteristic of the latest Gothic.

[1] Only in Normandy can our molded work of the thirteenth century be paralleled; *e.g.*, at Norrey and Bayeux. But in the fifteenth century French moldings are frequently small and often much undercut.

In a good many of the early and in some later arches the two systems of ornamentation both occur; some of the orders having carving, others molding; *e.g.*, in the pier-arches of the north transept of Hereford cathedral bands of tooth ornament appear in the molds of the pier-arches; in Weobley church, Herefordshire, ball-flower ornament; in Wingfield church, Suffolk, the Stafford knot (217); and the square-leaved ornament at all times, but especially in later work.

On the outside of the arches of windows and doorways a *hoodmold* or *dripstone* was usually added, projecting above the arch and throwing off the drip of the rain.

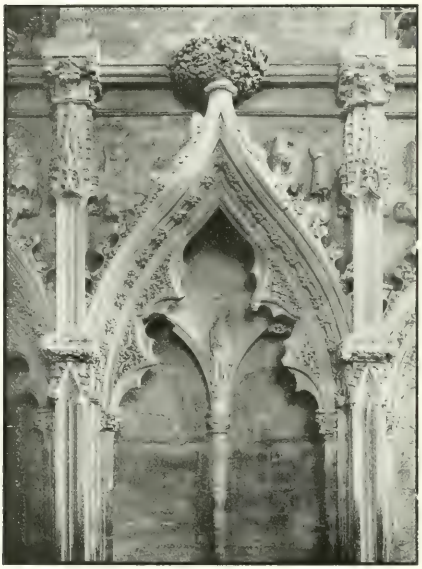
E. E. St. Mary's, York

Inside English churches, though seldom in France, hoodmolds were usually added to the pier-arches; not to strengthen them, for they are built but a short way into the wall, but to demarcate more clearly the support from the load, *i.e.*, the arch from the wall which it carries. At Ely arches of two orders (462), and at St. John's, Chester (742), arches of three orders are shewn without hoodmolds. At Bere Regis, Dorset, only the northern arches have hoodmolds (806).

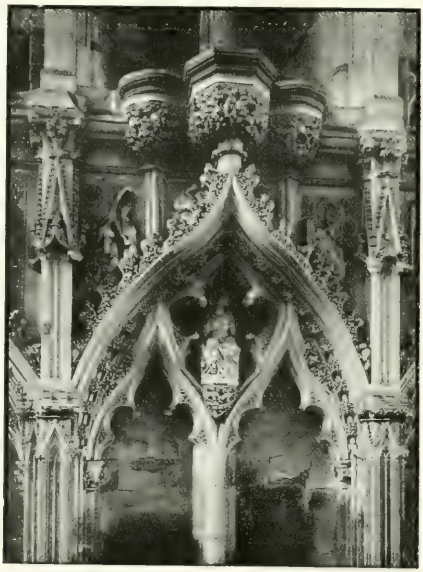
It should be added that the core of all the principal arches, as of the walls, nearly always consists of rubble; only their faces, and perhaps the lowest order, being in ashlar. In much Norman work, where the lowest order is broad, only

the extremities of the soffit are in ashlar, the central portion being in rubble plastered over.

Where piers threatened to bulge inwardly, *strainer* arches were sometimes added, *e.g.*, under the central towers of Canterbury and Wells (437), in Glastonbury transepts, and at Salisbury (145). Good examples occur at Finedon and Rushden, Northants (438). In the latter the strainer arch is not an after-



G. H. T.



G. H. T.

Ely Cathedral: Lady Chapel

thought, but an integral part of the design. A great defect in our aisled naves is that the piers are so numerous and massive as to obstruct the view of the chancel from the nave aisles. At Rushden the piers are made very slender, and there are only two on each side of the nave where usually there would be three: this makes the arches very wide. An arcade so designed is very weak, and a strainer arch is needed to stiffen it.

PART III.—ARCADING

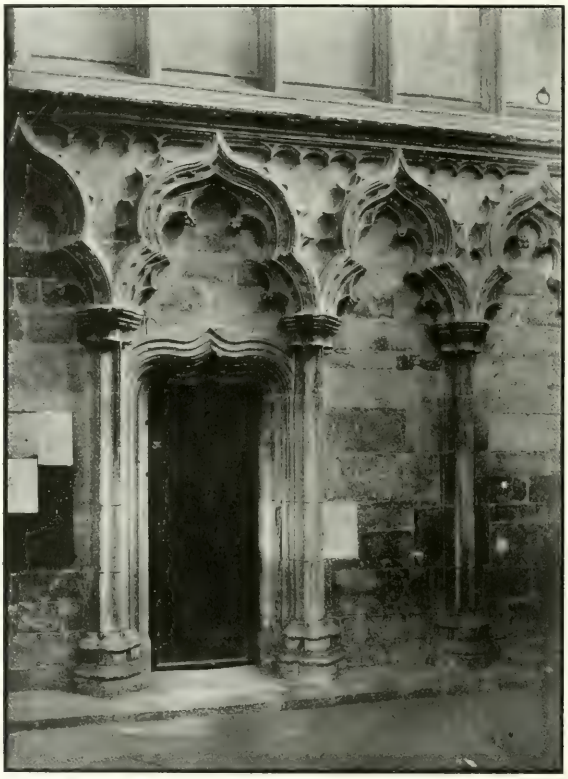
Of the factors of mediæval building construction the *primum mobile* was the arch; Gothic is essentially an arcuated style. Arches separate nave from chancel and nave from aisle; arches find their way into triforium and clerestory and window tracery, and over the heads of windows and doorways; arches right and left, diagonally and transversely, generate the vault; arches temper the straight lines

F. H. C. Beverley Minster: North Aisle of Nave

of the beams in the arch-braced and hammer-beam, and even in the tie-beam roof. The next step was to convert the leading constructional factor into a leading decorative feature; to convert a row of constructional arches, *i.e.*, an *arcade*, carrying weight, into a row of non-constructional arches, *arcading*,[1] merely decorative and ornamental, carrying nothing, having no *raison d'être* except to hide the bareness of

[1] The term "*arcade*" should be confined to a row of arches of constructional purpose, such as the pier-arcade of the ground story, or the arcades of a triforium and clerestory. The term "*arcading*" should not be employed except where the arches are purely decorative.

a wall. Such a process cuts away at once one of the great difficulties of architectural design, viz., how to reconcile decorative and constructional motifs. In a church like S. Vitale, Ravenna, or the new cathedral at Westminster, effective as is the veneering of the walls with a material both precious in itself and beautiful in colour, there



Lincoln : South-west Tower

is no relation whatever between the marble veneer and the constructional members of the building. In a great mediæval church, on the other hand, construction dictates decoration and peremptory harmony is secured ; the great constructional arcades find themselves cut down to diminutive proportions, but they only lose size to gain elaboration, variety of form, and richness and delicacy of molding. For many

a generation—from the eleventh to the middle of the fourteenth century—of all his decorative motifs nothing was so dear to the heart of the church builder as the arch in its varied forms. By the beginning of that century the niche began to replace it,

Lincoln Retro-choir

as at Gaddesby (460), to give way in its turn in the last products of Gothic art, the great royal chapels, to the rectilinear panel.

The earliest arcading naturally takes the form of the simple semicircular arch, as in the rich Norman gables which still survive north and south of the façade of Lincoln minster (441). It is only necessary to employ wider arches,

and to allow them to intersect, to obtain the design which appears in the upper part of the same gable, the chancel of Bolton priory[1] (442), the exterior of the transept of Christchurch[2] (441), and the interior of Bristol Chapter house (298).

The next step was to pass from the semicircular to the pointed, trefoiled, or cinquefoiled arch. Nothing can surpass the minute and delicate molding of the pointed arcading of the Chapter house (442) and façade of Lincoln minster (444) and the Lady chapel of Beverley minster (445), all *c.* 1230. The interior of the

I. E. York Nave

central tower of Lincoln is covered with pointed arcading (331). Contemporary with this, and equal to it in refinement, is the trefoiled arcading of the aisles of Lincoln (443, 445) and the staircase of Beverley (448); that of the aisle of Beverley nave (449) is really fourteenth-century work assimilated in design to that of the chancel, as may be seen on examining the undulatory foliage of the capitals (529): still richer, with its spandrels of foliage, birds, and beasts, reminiscent of the carvers of the nave of Wells, is the arcading of the elder Lady chapel at Bristol (75). Then come variants. Above the doorway of Salisbury Chapter

[1] Above it is a fourteenth-century cornice.

[2] Below is a window of the crypt.

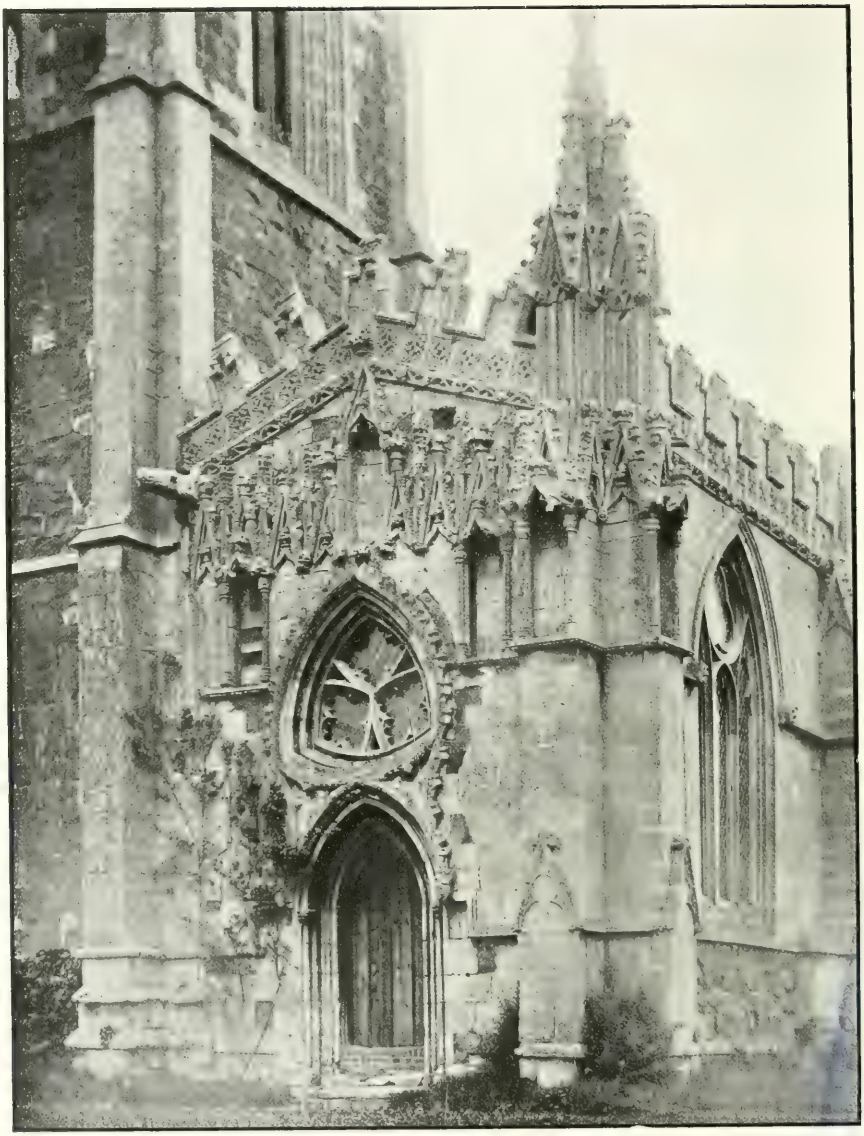
house are semicircular arches in which are inscribed round-headed trefoils (710); while in the chancel of Stone, near Gravesend, the arches are pointed and the trefoils pointed also; and the spandrels are filled with conventional scrolls of exquisite foliage (447); with this may be compared the staircase of the reader's pulpit in the refectory of Chester cathedral (446). In the last years of the thirteenth century the pediment came into great vogue; and is set over arches, which at St. Mary's, York (453), and Southwell (451) are pointed trefoils, but in York Chapter

F. H. C. Selby: Back of Stalls

house are pointed and trifoliated (452). Sometimes double arcading occurs, as in St. Hugh's work at Lincoln, copied in Beverley triforium (762). Or by way of variation, in a pointed may be inscribed a cinquefoiled arch, as in Salisbury Chapter house (450).[1]

Then comes the fourteenth century with its passion for the ogee arch, which in the aisle of Beverley nave (455) circumscribes an ogee trifoliated arch; this arcading is contemporaneous with that illustrated above (449). Two bowing

[1] In the spandrels illustrated are seen the Tree of Life, the Temptation, Adam and Eve hiding, the Expulsion from Paradise, the First Labour, Abel's Offering, the First Murder, the Punishment of Cain.



J. E. U.

Gaddesby, Leicester

ogees are shewn from Ely Lady chapel (454), and a depressed ogee doorway from the south-western entrance to Lincoln minster (456).

Then comes a revolution in design. Hitherto the arcading has been a repeat, getting fainter, however, as time goes on, of the arcuated construction of the church. Now it becomes a repeat of the window tracery. This is seen as early as 1255 to 1280 in the arcading of the aisle walls of Lincoln retro-choir (457, 784), where the tracery is of the early Geometrical type seen in the east window. Next comes tracery of later Geometrical character, and surmounted with the favourite pediment of the period in the aisle walls of York nave, 1291-1324 (458). In the arcading behind the stalls of Selby chancel the ogee arches and flamboyant tracery point to a date *c.* 1330; with this compares the reredos of Beverley minster (459). Finally, when the window tracery was shaped into rectilinear panels, the wall-arcading once more followed its lead, as in the eastern chapels of Peterborough, 1496-1528.

H. E. I. Peterborough: Eastern Chapels

CHAPTER VIII

THE PIER AND ITS MEMBERS

PART I.—THE PIER

SECTION I.—COLUMNS; CYLINDRICAL AND OCTAGONAL PIERS

WHERE a church has aisles, the clerestory walls are carried on arches, which in turn rest on piers.[1] Of piers the oldest is the Classical column, which was elaborated in ancient Greece. From Greece it passed to Rome; and by the Romans was employed either as a detached support or as a member

J. F. H. Ely: North Transept

J. F. H. Ely: South Aisle of Nave

[1] The term *pier* is the generic name for any detached mass of masonry carrying an arch; a row of piers with the arches they support is called a *pier-arcade*. Piers are either simple or compound. *Simple* piers are usually cylindrical or octagonal, rarely hexagonal. *Compound* piers are surrounded by columns or shafts, or both. These columns or shafts may be bonded into the main mass of the pier, when they are

W. T. A

Gloucester : Western Nave

of a compound pier. In the Early Christian architecture of Rome it was employed as a detached support; all the ancient Christian basilicas had rows of columns, *colonnades*, separating the nave from the aisles; *e.g.*, S. Agata, Ravenna (956), and S. Sabina, Rome (957); the columns being sometimes of the Ionic, more often of the Corinthian or Composite, seldom of the Doric or Tuscan order.

H. P. Peterborough Transept

In Pagan Rome, the columns were usually monoliths of great size, costly to quarry, and still more costly to transport. Such columns it was quite impossible for the early Romanesque architects to procure. In Normandy the Romanesque school of the eleventh century hardly ever employed cylindrical piers. But to the columnar type of pier there were attached time-honoured associations; every pilgrim who returned from a visit to such venerable churches as those of Rome, Ravenna, and Bethlehem, brought back the news that the piers of these churches were columnar.[1]

said to be *engaged*, or better, *attached*. If they are not bonded in, they are styled *detached*. Strictly speaking, the term *column* is applicable only to the Classical column, Doric, Ionic, or Corinthian, which tapers upwards, has a central bulge or entasis, and whose thickness is regulated by its height, not, like the mediæval cylindrical pier, by the weight it has to carry; moreover, the Classical column was either a monolith, or composed of monolithic drums; whereas cylindrical piers in mediæval churches are usually composed of numerous small stones built in courses as in a wall.

[1] It is remarkable how infinitesimal was the influence of the Early Christian and Classical architecture of Rome on our English work, other than in planning and in the adoption of the crypt. Not only every pilgrim, but every bishop with his suite paying his periodical visit *ad limina*, and every ecclesiastic and canon-lawyer having business at the Papal court, or in search of preferment—not only men who faced a solitary visit to Rome as pilgrims, but those who were constantly travelling thither—were as familiar as a modern Cook's tourist with the architecture of the Early Christian churches and with the remains of Classical times, not only those which are to be seen nowadays, but very much else that has now disappeared.—R. A. D

The result was that here and there the colonnades of the basilicas found imitators among the Romanesque builders; in England in the last quarter of the eleventh, in Normandy not till the twelfth, century; this being one of the many ways in which the Anglo-Norman builders exhibited their independence of the traditions of the Romanesque of Normandy.

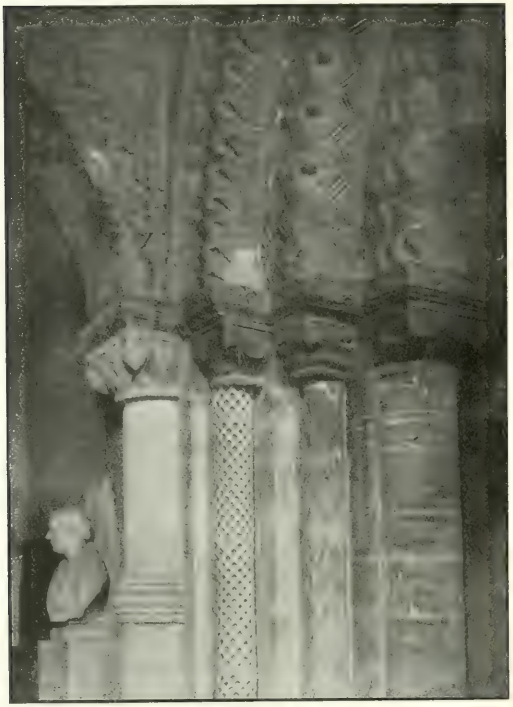
1111 Peterborough: South Aisle of Nave

Two types of cylindrical pier were employed in English Romanesque. In the first the pier was broad and squat. The advantage of keeping the pier and the ground story low was that it allowed greater height to be given to the triforium chamber, when the latter was to contain altars, and was to have windows in its back wall as at Peterborough (465).[1] Sometimes, however, low cylinders were employed simply to keep the interior low and reduce its cost, as in St. Bartholomew's, Smithfield, and Malvern nave.

In the Romanesque naves a different type of cylinder, one of vast height, was sometimes employed. The reason for this was that on one side of the nave of a church of monks or regular canons there was always a walk of the cloister abutting the aisle wall of the nave. Aisle windows pierced at the usual level in the wall adjacent to the cloister would have given little light, as they would only have got borrowed light from the cloister walk; they had to be pierced so high as to clear the cloister roof; in which case they gave direct light. Little of this light, however, would reach the nave, unless the pier-arcade was at least as lofty as the high aisle windows. This necessitated tall piers to carry the arches between the nave and

[1] The low cylinders of the chancel of Tewkesbury (42) were heightened in the fourteenth century.

aisle. What was done on one side of the nave for a practical reason was repeated on the other side for symmetry. These tall piers appear early in the eleventh century in the Benedictine church of Tournus, Burgundy. In England they are one of the characteristics of the West of England school of Romanesque, appearing in the naves of Tewkesbury (42), Gloucester (463), and in the ruined nave of Pershore, all Benedictine abbeys.



C. F. N. Northampton St. Peter

In a few examples, *e.g.*, at Durham, cylindrical alternate with compound piers; in Peterborough chancel and transept, which was not set out till after 1117, cylindrical alternate with octagonal piers (778); so also in Southwark cathedral, a church in which survives a large admixture of Romanesque (485).

In the Greater Gothic churches of England the cylindrical pier went completely out of fashion; not so in France; fine examples of Gothic colonnades are seen in the choirs of Rouen and Sèez cathedrals and Montargis, the naves of St. Jacques, Lisieux, St. Pierre, Coutances, and elsewhere; in the later Flamboyant of France the column was greatly in vogue. In the majority of English parish churches the cylindrical or its variant, the octagonal, pier was in common use at all periods, simply from motives of economy; *e.g.*, at Petersfield, Hants (230).

SECTION II.—ROMANESQUE COMPOUND PIERS

By far the greater number of Romanesque piers in our Greater churches were compound, *i.e.*, they were composed of a central core to which were bonded in

columns or shafts or both; detached shafts do not come into use till St. Cross, Winchester, *c.* 1165, and Canterbury choir, 1175. As a rule, as has been stated (464, note), the Romanesque piers were designed with reference to the loads which they had to support. These loads were of two sorts. In a nave any one pier has to support the springers of an arch to the east and an arch to the west; and if the nave and aisle be vaulted, it has also to support the springers of the two vaults.[1] A Romanesque pier, therefore, normally is designed with reference to the pier-arches on the one hand and the vaults on the other. Such a pier may be said to be a logical or scientific one. But there are exceptions in Romanesque, and still more in Gothic; piers which are designed without reference to the pier-arches and vaults; such piers are illogical, unscientific. The tendency was more and more towards the latter type; the correlation of the columns and shafts with the orders of the arch and the ribs of the vault being found more and more difficult to secure as the orders of the arches and the ribs of the vaults increased in number.

H. E. M. Christchurch: Nave from South-east

In the simplest type of unvaulted parish church the arches of the nave may consist of but one single order.[2] To support such arches simple square piers of masonry would suffice, as at St. Nicholas, Leicester (242); they would look very ugly,

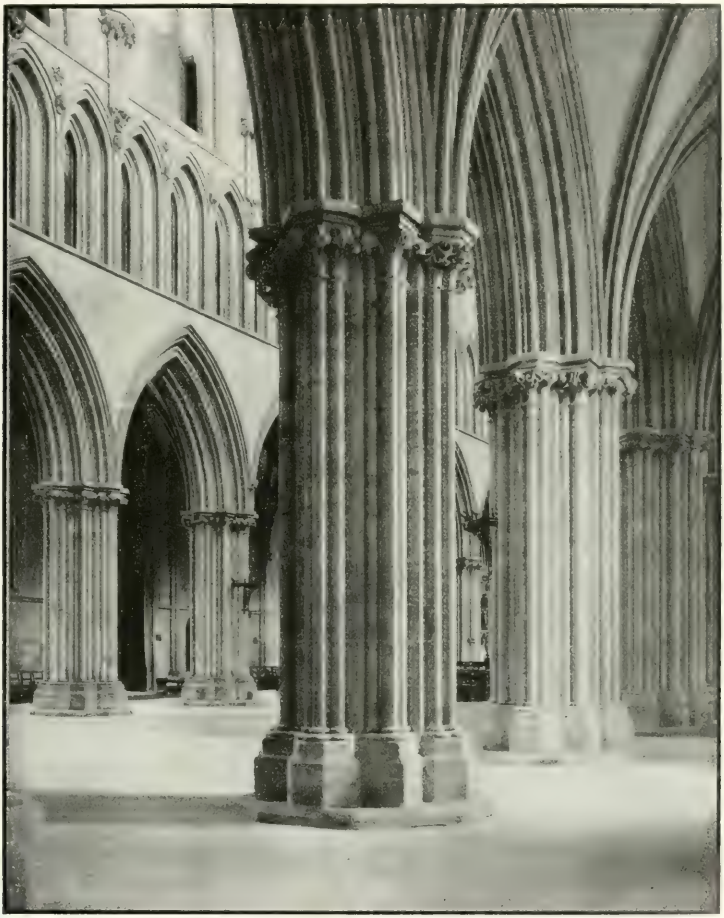
[1] In the case of a high vault it only supports indirectly the springers of the vault when the vaulting shafts are brought down on to the capital of the pier.

[2] For explanation of the term *order* as applied to arches see p. 442.

S. S. Lincoln Façade: North-west Doorway

S. S. Lincoln: West Doorway

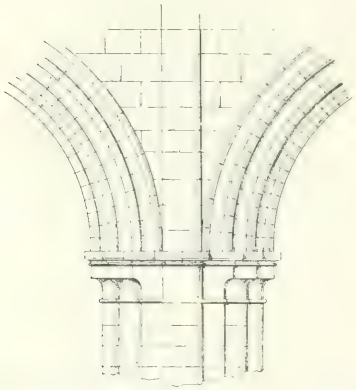
however; their appearance would be much improved if on the eastern and western side of each were added a projection to receive the spring of either arch. If the



J. F. H. Wells Nave

arches are square edged, the projections may be rectangular, *i.e.*, *pilasters*; the piers of the Romanesque churches of Provence and of the copies of them in Palestine

and those of St. Albans (27) are so designed. But since the under surface or *soffit* of the Romanesque arches was often molded into the form of a heavy roll, an attached column might be used instead of a pilaster, harmonising with the roll molding of the arch, *e.g.*, in the triforium of Thorney abbey (738). In a crypt, ceiled with a groined vault, further elaboration would arise; there would be arches to support to the north and south as well as to the east and west: to find room for the former as well as the latter, pilasters or attached columns would be needed at all the four cardinal points, and the pier would become cruciform on plan, *e.g.*, at Whaplode, Lincolnshire (478), and later examples (477). The case of a pier in a nave with aisles covered with a cross-ribbed vault is analogous. On the aisle side of the pier spring at least three ribs—one transverse and two diagonal—each of which needs a support; on the nave side of the pier usually rises a shaft from which at the level of the triforium or clerestory also spring one or more vault-ribs, *e.g.*, the naves of Roche (470) and Lichfield (785). (If the nave be unvaulted, this tall shaft may still be present, supporting one end of a tie-beam of the roof, *e.g.*, Ely nave.) In either case place for it is required on the inner side of the pier, which thus comes to consist of a rectangular core surrounded by four attached columns. But we have seen that the aisle vault is supported on the side of the pier by three ribs; logically, therefore, there should be and usually is, not one attached column, but three on the aisle side of the pier; or, more often, since the early transverse ribs were usually broader than the diagonals, one attached column flanked by two attached shafts. (The photograph of the south aisle of Peterborough nave (465) shews the supports of the transverse rib and of one of the diagonals, the remaining one being hidden by the transverse rib.) In similar fashion, if there is a clerestory vault, it will have at least three ribs as above, and a triple vaulting shaft will be required. In such a pier as this there will be three members on each of the north and south sides, and one on each of the east and west sides; a total of eight members.[1] But in the Greater churches it is rare to find pier-arches of a single order; they usually consist



PORTION OF PIER IN NAVE, ROCHE ABBEY

A. P.

[1] Both in vaulted and unvaulted churches the pier with eight columns or shafts was a great favourite; *e.g.*, late in the twelfth century at Grantham, and in the thirteenth century in Beverley minster (471), Ely presbytery (574), Boxgrove (473), Eaton Bray, Beds. (475), Moulton, Lincolnshire (478), and Westminster (480).

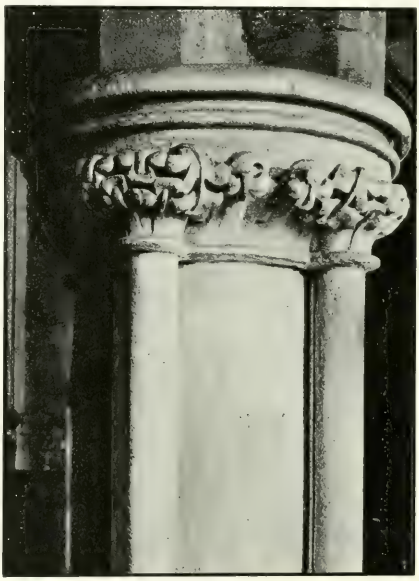
of two or three orders or sub-arches. If the arch is of two orders, then the inner order will be supported by a stout column as before; but for the upper order two smaller supports, *i.e.*, shafts, will be required; *i.e.*, one column and two shafts on the east side, and the same on the west side of the pier. This will bring up the total number of supports to twelve. In the same way, if the pier-arch consists of three orders, four more shafts will be required, and the total number of columns and shafts will rise to sixteen. And even a still larger number of columns and shafts was sometimes annexed to the pier.

F. H. C. Beverley Minster: Central Transept

Such in a general way is the composition of a logical Romanesque pier. There are, however, many exceptions, some of which are only apparent ones. In the north transept of Winchester cathedral, the northern arch, having but little weight to carry, is of a single order, which therefore is supported on the left by a single attached column (61); but the western arch, being of two orders, requires three supports, one for the inner order and two for the upper order. In the nave of Norwich cathedral the pier-arches are of two orders, and the outer order projects but little beyond the broad inner order; to support the ends of the former, therefore, two small shafts suffice; to support the broad inner orders single massive columns might have been built as in the procession path; but such broad columns would have seriously reduced the floor area of

the church; therefore three columns of moderate size were built side by side, supporting the single inner order. At Christchurch, Hampshire,[1] also a pair of columns is employed to support the broad inner order of the arch (467). Again, the pier-arches of a nave may have three orders on the inner side, and only two on the outer side (the side to which the aisle is adjacent); in that case there will be more supports on one side than on the other, and the pier will not be symmetrical. This is seen at St. Albans and St. John's, Chester (742), where the pier-arches

G. G. B. Moulton, Lincs.



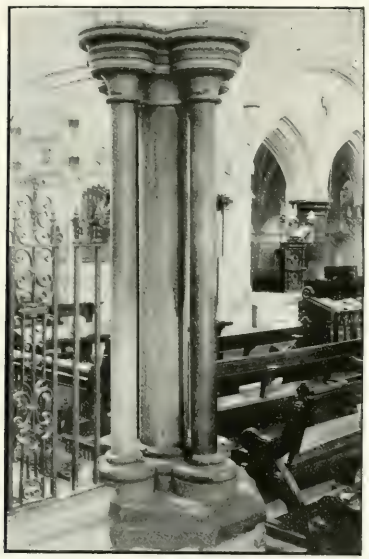
G. G. B. Weston, Lincs.

have three orders facing the nave, but only two facing the aisle. At Peterborough the pier-arches have three orders on each side (465).

A few examples of compound piers may be given, to shew the different fashion in which the correlation of support and load is managed. In the eastern nave of Lessay, the aisles have groined, *i.e.*, unribbed, vaults, whose transverse arches are of a single order and are supported by columns; no supports, however, are provided for the groins; the nave has a cross-ribbed vault, and a vaulting shaft is provided to carry each transverse arch; the pier-arches are of two orders, and each is supported

[1] The vault was not added till a century later, and does not fit the supports.

by a column flanked by two shafts; the total number of supports, therefore, is eight (296). In Durham nave the piers are alternately simple and compound; the aisles have cross-ribbed vaults; in each compound pier there is a single column to support the transverse arches of the aisle vault, which are of a single order; this column is flanked by shafts which support the two diagonal ribs of the aisle vault; the pier-arches are of two orders, and so the piers have a column between two shafts on the east side and the same on the west side; on the side of the nave a triple vaulting



F. B.

F. B.

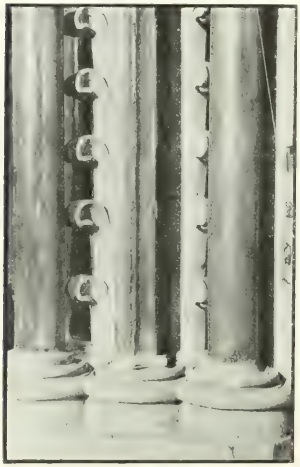
Boxgrove Priory, Sussex

shaft rises to the clerestory to support the transverse arch of the high vault, which is in two orders; the total number of supports is twelve (746). Very frequently great modifications are made in the composition of the compound pier; in Rochester nave, the builder seems to have had great difficulty in making up his mind how to correlate the piers and their loads; they varied in composition and improved in design as the work progressed from east to west. In the procession path at Norwich the aisles of the apse (on the right) are of two orders, and the broad inner order is provided with a broad attached column, while the outer order rests on two shafts; but the transverse arch of the vault, though it is of only one order, is provided with two shafts (130).

Frequently the composition of the pier is simply dictated by caprice. Thus in Peterborough nave (465) the pier in the foreground is a cylinder with attached columns and shafts, and no supports are provided for the two outer orders of the arch; whereas the pier to the right is a normal compound pier with load and supports duly correlated. In the chancel none of the piers are compound (778).

SECTION III.—GOTHIC PIERS

In the later years of the twelfth century the passage from Romanesque to Gothic architecture was finally accomplished; the goal, however, was reached by different routes. In the North of England, a vigorous independent school of Gothic arose, in which the Cistercian churches of Roche, *c.* 1165, and Byland, *c.* 1170, afford advanced examples of vaulting and planning. In the West of England a remarkable school arose, free from all tincture of influence from Burgundy or the Île de France, *e.g.*, the western bays of Worcester nave, *c.* 1170, the choir of Wells, *c.* 1175, and the Benedictine church of Glastonbury, 1184, which are also of advanced type in vaulting and in planning. Of the third, or South-Eastern, school, the earliest representatives are St. Cross, Winchester, *c.* 1165, Canterbury choir, 1175, New Shoreham, *c.* 1175, Chichester retro-choir, 1186; these churches have high vaults and are of advanced plan; they have intimate connections with the great school of the Île de France across the Channel.



S. S. Lincoln: Choir Transept

As regards pier design each school had ideas of its own. The ideal of the *Western* school was stability. It was determined to have Gothic vaults; it was also determined to have as little as possible of Gothic abutment; of the external flying buttress they would have none; to the clerestory buttress, on the other hand, they gave great strength, bringing it down to an internal flying buttress (404); the aisle buttress was given little projection; for abutment what was mainly relied on was, as in Durham nave, thickness of wall, both aisle wall and clerestory wall. But the great thickness of the latter rendered it necessary that the piers below should be massive, and massive they were made. Still further to safeguard the vaults, the interior was usually kept low;[1] to secure this, the triforium was given little height, as in Wells

[1] The west bays of Worcester nave are lofty, owing to the great height given to the triforium, probably to assimilate it to a pre-existing tall Norman triforium in the eastern bays of the nave.

nave (754); or triforium and clerestory were blended in one, as at Glastonbury (747), Pershore, and Christ Church, Dublin (765); moreover the ground story also was kept low; hence its piers were not only thick but short. Such a squat, misproportioned pier required artistic treatment to make it tolerable. This was secured by a great multiplication of its vertical lines. Instead of employing columns among its subordinate members, nothing was used but slender shafts, which were arranged in triplets: eight groups, each of three shafts, was the normal arrangement; *e.g.*, in Wells choir (510) and transept (510), St. Mary, Shrewsbury (515), Lichfield choir, and in alternate piers at Pershore: sometimes triplets alternate with a single shaft; as in Dore retro-choir (546), Pershore (510), and Lichfield nave (785). These shafts are not detached; nor are they of marble, but of coursed freestone.[1] Examples of the Western pier occur in Worcester nave, Wells, Llanidloes (probably brought from the Cistercian abbey of Cwm Hir in Radnorshire), Llandaff, Lichfield choir and nave, Christ Church, Dublin, Dore retro-choir, Pershore, St. Mary's, Shrewsbury; they are very rare to the east or north of a line drawn from Wells to Lichfield and Chester.

E. W. S. Eaton Bray, Bedfordshire

By the *Southern* school also shafts were preferred to columns in the compound pier. But as a rule the shafts were not in freestone, but in marble. Commonly a shell marble was used; from Purbeck in Dorset, Bethersden in Kent, or Petworth in Sussex. Where, however, there was a good local marble, that of course was employed; in Durham retro-choir an encrinital marble from Frosterley in Weardale, at Fountains and Jervaulx Yorkshire marbles, at Wells and Bristol Langport lias.

[1] Shafts of local marble were employed in Glastonbury Lady chapel, 1184-1186.

By far the commonest was the Purbeck marble; this was sent all round the country wherever there was water carriage; *e.g.*, to Durham for the Galilee, *c.* 1170-1175; Lincoln for the choir, 1192; to the Temple church, 1185, St. Patrick's, Dublin, and Westminster abbey, 1245-1398; to Exeter from *c.* 1270. As a rule these marble shafts were bedded with thin sheets of lead; and to obtain this lead a vast number of shafts were destroyed at the Dissolution.[1] To hold the sections of

I. K. P. Exeter Nave

shafting in their place, they were inserted in a brass or stone band or annulet bonded into the pier (481); *e.g.*, Salisbury Lady chapel (71). The central pier varied in shape, being circular, octagonal, or otherwise designed. At Chichester (484), Boxgrove (473), and Weston, Lincolnshire (472), it is circular; at Waddington, Lincolnshire, it is an octagon with straight sides (479); at St. Mary le Wigford, Lincoln, an octagon with hollow sides (479); an octagon with sides alternately

[1] See Mr Harold Brakspear's *Waverley Abbey*, 56, and *Stanley Abbey*, 15 and 22. On the damage done by the injection of molten lead see Scott's *Gleanings from Westminster Abbey*, 196.

straight and hollow at Waddington and St. Mary le Wigford; at Weston a polygon of sixteen sides (485); at Eaton Bray, Bedford, a hollow-sided square with four attached columns (481); most complex and earliest of all is the pier at the entrance of the eastern transepts of Lincoln minster (474). Sometimes, like the shafts, it was of marble; *e.g.*, at Boxgrove (473), Chichester retro-choir, and Ely presbytery; sometimes it was of freestone, in agreeable contrast with the dark marble shafts; *e.g.*, in Worcester choir. Where marble could be afforded, it was usually employed for the shafts; but sometimes, for contrast, the shafts were alternately of marble and freestone; *e.g.*, in the pier of the eastern transept of Lincoln; parish churches, as a rule, had to be content with shafts of freestone, *e.g.*, Eaton Bray (475).

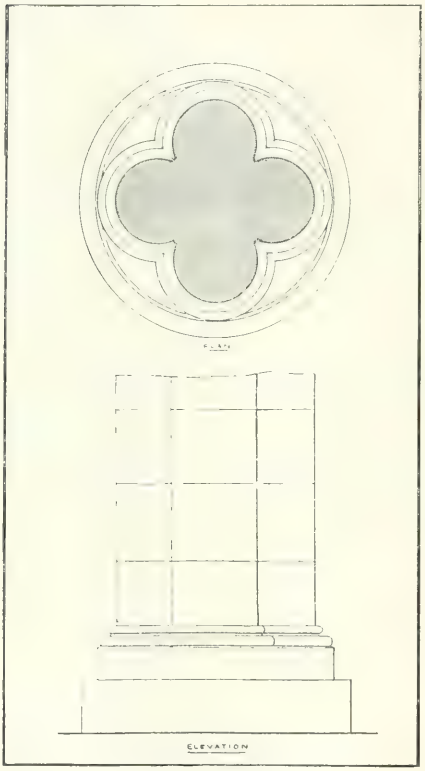
I. H. C. Beverley St. Mary: Nave

Whether a shaft was of freestone or marble, it was built in numerous courses; and as the shafts were usually built in but two or three lengths, if they had been put up at the same time as the central pier, the latter owing to its numerous mortar joints would have settled much more than the shafts, leaving the latter to carry all the weight; this would have entailed their fracture. To obviate this, the central pier was built first with capitals, annulets,[1] and bases all ready to receive the shafts; but the latter were not inserted till all settlement had ceased in the central pier (481).[2] At St. Albans, both in the

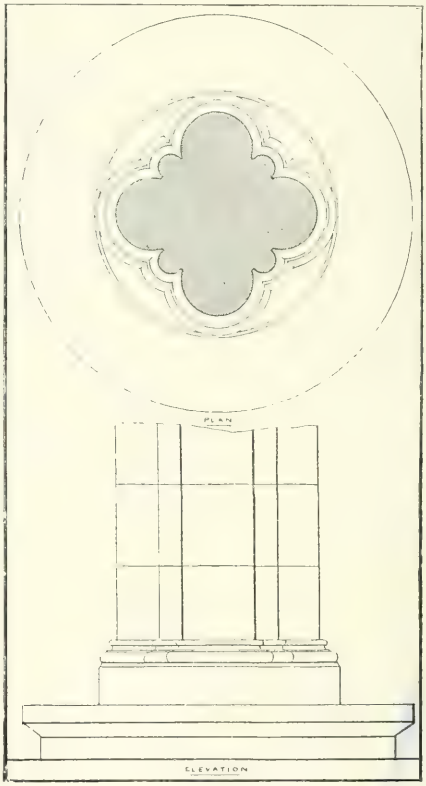
[1] Annulets occur also in the twelfth century; *e.g.*, St. Peter's, Northampton (466).

[2] The diagram is from Choisy's *Histoire d'Architecture.*

ground story and the triforium of the western nave, may be seen capitals, annulets, and bases ready for shafts which were never inserted. It is probable that the Purbeck shafts were usually turned in the quarry; but there is an entry in the sacrist's roll at Ely for 1341. "In le turning xxx basses pro columpnis



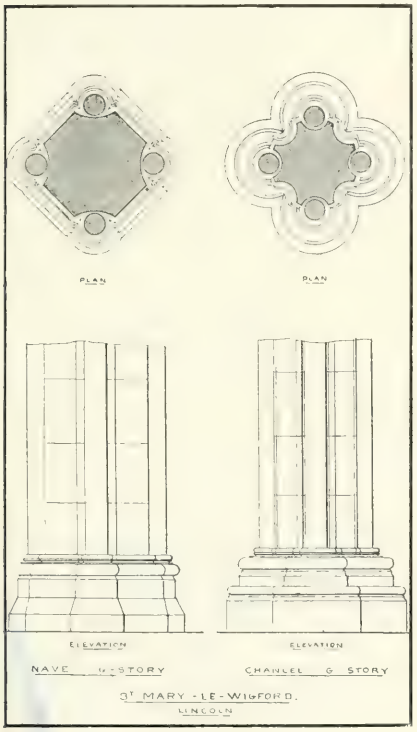
E. S. Whaplode, Lincolnshire



E. S. Moulton, Lincolnshire

in le parclos, ijs." Numerous entries at Westminster and elsewhere shew that the polishing was done on the bench. The Purbeck marble took a very bright polish, and while the polish lasted had a great vogue; not only for shafts, molded capitals, bases, and annulets, but even for foliated capitals, fonts, tombs, and effigies. But in course of time it flakes and decays and looks very unsightly. Moreover the pier with detached marble shafts was anything but good construction; for the whole

superstructure of the church had to be poised on the central pier, till it should be safe, perhaps a generation later, to add its encircling shafts. And even when they were inserted in their annulets, a pier so constructed was nothing like so stable as one with the shafts attached, *i.e.*, bonded into the central pier. The transition may be seen taking place as early as *c.* 1220 in Lincoln nave, where some of the piers



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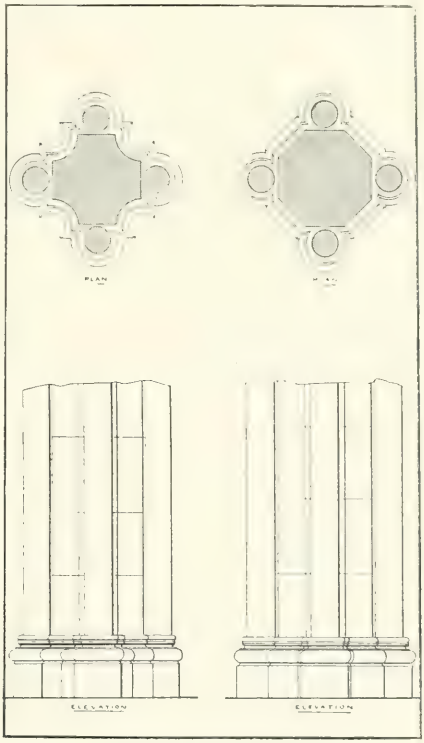
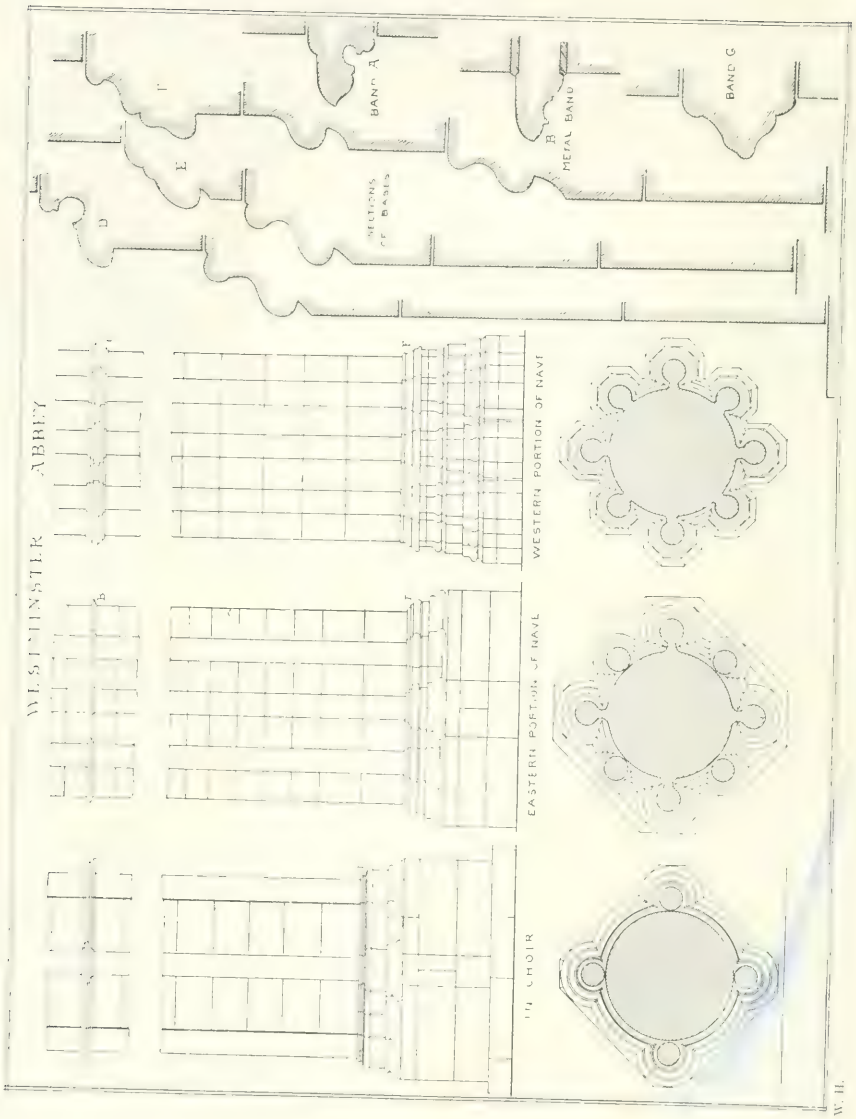


Waddington, Lincolnshire

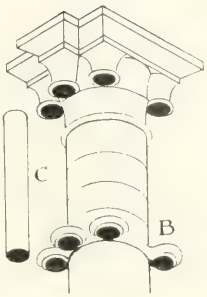
have detached, others attached columns and shafts. At Eaton Bray half the piers have a central core with four engaged shafts, which is encircled by four detached shafts; the alternate piers have all eight shafts attached (481). At Westminster the earliest piers, designed *c.* 1245, have four detached shafts; the piers of 1258 to 1272 have four detached and four attached shafts; while those of 1376 to 1398 have eight shafts, all attached (480). In the presbytery of Southwark cathedral cylinders alternate with octagons, on both sides of which vaulting shafts rise to support the

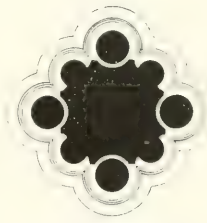

WESTMINSTER ABBEY
BAND A
BAND B
METAL BAND
BAND G
SECTIONS OF BASES
WESTERN PORTION OF NAVE
EASTERN PORTION OF NAVE
THE CHOIR

vaults of the aisles and the clerestory; in the northern arcade the inner order of the pier-arch is carried by detached shafts; in the southern by corbels (485, 307).

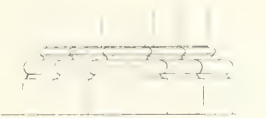
The "Purbeck use" appears in 1175 in the chancel of Canterbury. This is the more surprising, as the French architect, William of Sens, had no precedents in his own country. Marble shafts, however, occur in the choir of St. Cross, Winchester, though not in the piers: and at Christchurch, Hampshire, there still remains a late Norman house by the river in which Purbeck marble is used for window shafts. The "Purbeck use" in Canterbury was probably suggested to William of Sens by the warden of the works, *custos operis*,[1] though it is possible that he may have himself seen the choir of St. Cross, Winchester, if he entered England, as many did, *via* Southampton. From Canterbury the pier with detached marble shafts penetrated in the thirteenth century far into the domains of the other schools of early Gothic. In Wells itself it appears in the north porch and west front of the cathedral; at Hereford, Bristol, Brecon, and Pershore in the Lady chapels, at Worcester in the choir and retro-choir, at Salisbury throughout the whole of the cathedral, and across the Irish Sea in St. Patrick's, Dublin. In the domain of the Northern school of early Gothic it is seen in the Galilee and eastern transepts of Durham, in the choirs of Lincoln and Fountains, in the arcading of the aisles and the triforium of Beverley, in the transepts of York. In the Eastern counties it won its highest triumphs in the west front of Peterborough and the presbytery of Ely. Examples of it occur in the early years of the fourteenth century in Winchelsea choir, Wells retro-choir (91), and Bristol Lady chapel.

The normal pier of the *Northern* school of early Gothic first appears in about the middle of the twelfth century, and is largely due to the Cistercian builders, who developed by preference the cylindrical





Alternating Piers.

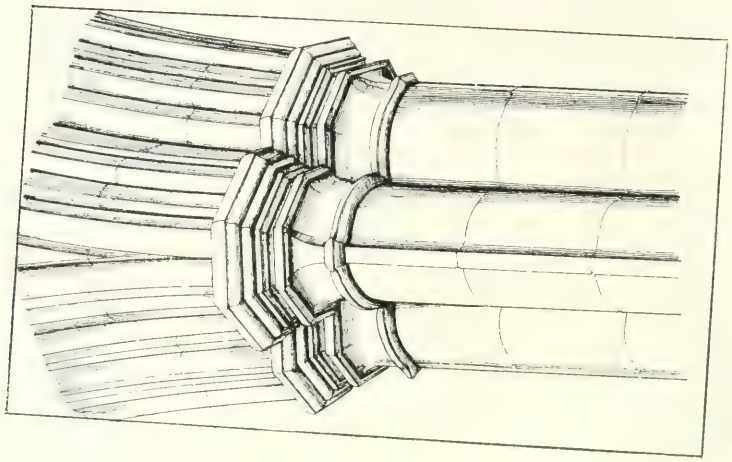


Base

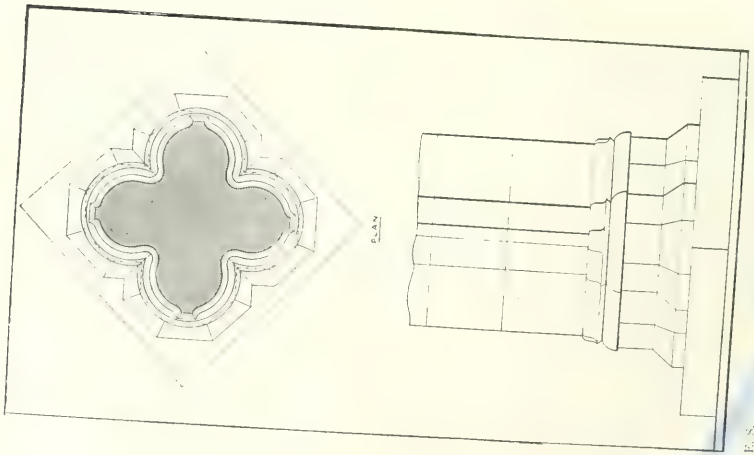
NORTH ARCADE

Eaton Bray

[1] The *custos operis* of a mediæval church answers roughly to the chairman of a modern building committee, except that he had no committee.



E. S. Sleaford, Lincs.



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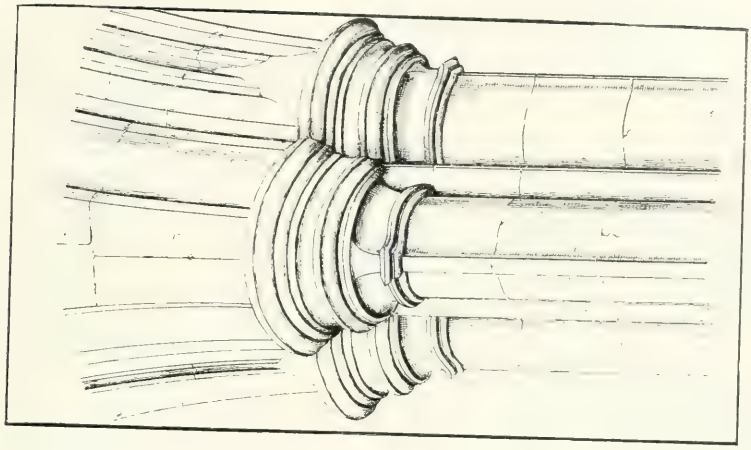
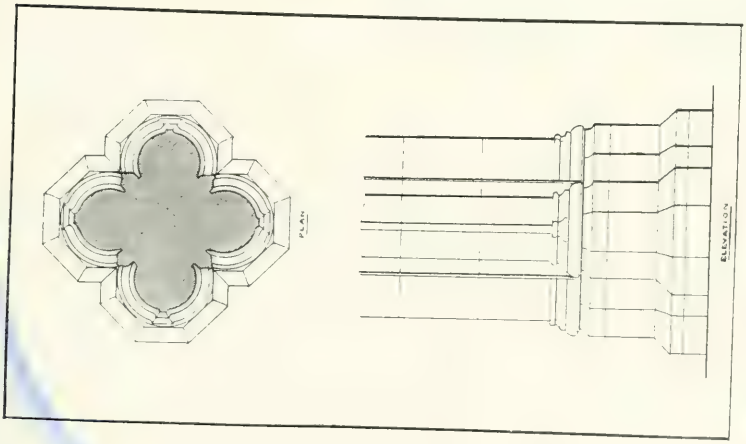


Leadenham, Lincs.



Leadenham, Lincs.

or octagonal and not the compound pier: good examples remain at Fountains (416), Kirkstall, Furness, Byland, and Roche (470). The piers of Fountains nave are simple cylinders, which each have single shafts facing the aisles and supporting transverse arches of one order, which carried barrel vaulting (283). In Kirkstall nave the piers vary, but consist in general of a cylinder surrounded by shallow attached columns.

The Northern differs both from the Southern and the Western pier in that it is an assemblage of columns and not of shafts. Sometimes, like the Southern pier, it is worked in marble, *e.g.*, in Lincoln nave and Ely choir, but in marble blocks or drums, not in monoliths. Being constructionally good, it is very common in Cistercian work, not only in the North of England, *e.g.*, Rievaulx (13), but at Netley, Tintern (755), and Strata Florida. It is also found in many Northern churches, such as St. Mary's, York, and Selby (Benedictine); Cartmel and Hexham (Austin Canons); York minster, Ripon, Beverley (471), Southwell, Howden (Secular Canons), Patrington (62), and Hartlepool (parochial). Outlying examples occur on the south side of the nave of New Shoreham (740).

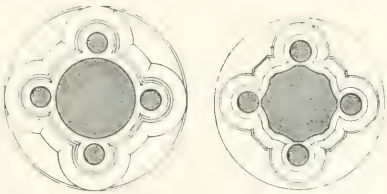
Chichester Retro-choir

In Norman work columns and shafts are semicircular, but at Roche and Byland an artistic improvement is made by making some or all of the attached columns or shafts of pointed section; from their resemblance to the keel of a boat they are said to be *keeled* (486). These columns of pointed section are particularly common in the North of England in the last half of the twelfth century, and later in the central pier of Beverley transept (471) and in the South of England generally. The next step was to emphasise the pointed form by hollowing the column or shaft on either side of the point; in this case they are said to be *pear-shaped*; *e.g.*, in Wells choir (486). The next step was to cut down the *arris* or sharp edge, leaving a narrow, flat, rectangular band on the face of the shaft, termed a *fillet*; these narrow fillets are seen in the end piers of Beverley transept and in Lichfield nave and are

common in the North and West of England alike (486). In the last half of the thirteenth and the first half of the fourteenth century a broad fillet is often employed (486); *e.g.*, in the porch of Bridlington (523), and at Sleaford (482) and Leadenham, Lincolnshire (483). In the early Gothic of the South of England the shafts, as a rule, remain semicircular and are not filleted; *e.g.*, Chichester retro-choir (484), Ely presbytery (552), and Lincoln minster (517); probably because the normal shaft was of marble and was turned in a lathe. In later Gothic the southern use, as a rule, was followed, shafts and columns being semicircular, but in coursed freestone, not in marble; *e.g.*, Merton College chapel, Exeter cathedral (553), St. Mary, Beverley (477); filleted columns, however, occur occasionally; *e.g.*, at Swarby, Lincolnshire (558), and Wolborough, Devon (538).

A few examples of ultra-logical piers may be mentioned. In the south transept of Gloucester, 1330-1337, there spring from or near the capital of the vaulting shaft no less than nine ribs; all these are represented in the wall-pier by tiny shafts, "*beads*," each with its own capital and base. Sometimes even the moldings of the ribs and pier-arches are reproduced in the pier; *e.g.*, in St. George's, Windsor; with which may be compared the piers of St. Mary Redcliffe, Bristol, and King's College, Cambridge, and the village church of Swarby, Lincolnshire (558). In the later Flamboyant of France it is common for the moldings of the pier-arches and ribs to die into the head of the pier, only to reappear in the base and plinth.

G. E. S. L. Southwark



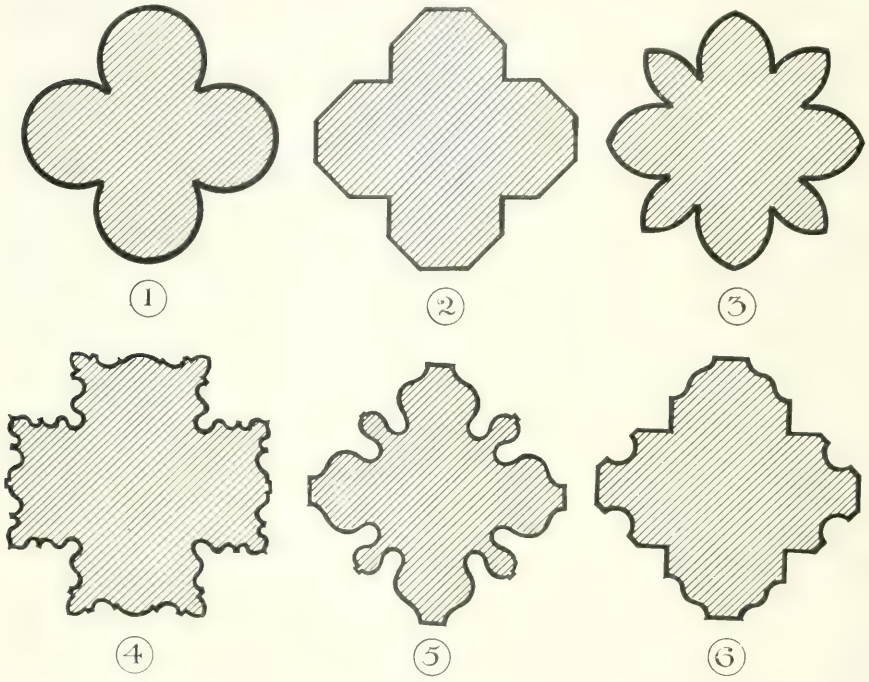
E. S. Weston, Lincs.

In the above piers, which range from *c.* 1150 to *c.* 1400, the number of columns varies from four to eight or sixteen. In the last half of the thirteenth century a very effective pier occurs; usually composed of sixteen semicircular columns; the pier is lozenge-shaped, on each side five columns being arranged in a row; *e.g.*, Merton College antechapel and Exeter cathedral (553). In Bridlington nave the piers consist of four rows of four columns, twelve in all. At Alphington, Devon, a variant is seen of the Exeter pier.

In the latter part of the fourteenth century and onwards the favourite composition was one of four semicircular columns set widely apart and separated by a broad, shallow "casement" or other molded member; it is almost universal in the larger parish churches; *e.g.*, Howden (781) and St. Mary, Bevreley (477). A series of late examples is illustrated from Devon (539).[1]

[1] A type of pier very common in the Midlands—*e.g.*, Fotheringhay, Wisbech—may be added. It consists of a very tall and slender octagon of distinctly oblong section, with its oblique faces continuous

Occasionally the shafts of a pier are covered with carved patterns, sometimes, as in Canterbury crypt, added to the shafts at a subsequent period. Remarkable examples of enriched Norman shafts, usually of late twelfth-century date, occur in the ruined chancel of Orford, Suffolk, in the nave of Pittington, Durham; in South Stoke, Oxon. (548), Compton Martin, Somerset, the southern triforium of

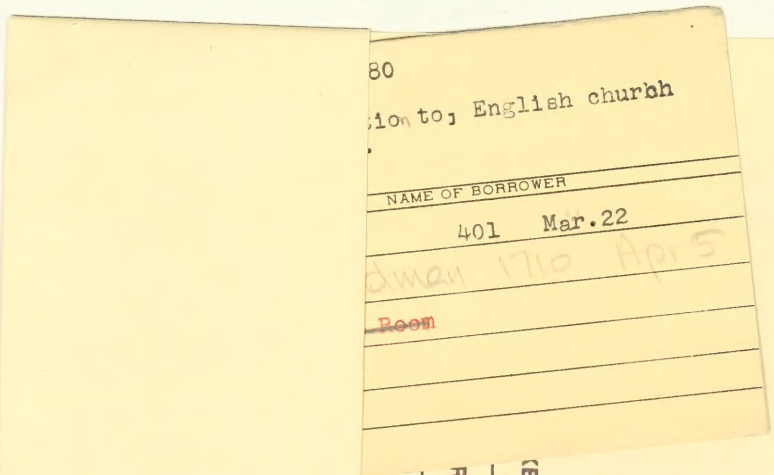


1. Semicircular
2. Chamfered.
3. Keeled
4. Pear-shaped.
5. Narrow and Broad Fillets
6. Broad Fillets.

Christchurch nave, the western doorways (restored) of Lincoln minster (468), St. Peter's, Northampton (466), and elsewhere.

with the outer order of the arch, and a shaft attached to its east and west faces taking the inner order. This is very common in Leicestershire—Market Harborough, Ashby Folville, Houghton-on-the-Hill; in Northants—Brampton-by-Dingley, Islip, Stanion; and in Cambridgeshire—Leverington, Caxton, etc. Dated examples are 1430-40; the Cambridgeshire examples for the most part appear to be rather later.—A. H. T.

END OF FIRST VOLUME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